CA2ALEØ 7
85H32

HISTORY OF FOREST AND PRAIRIE FIRE CONTROL POLICY IN ALBERTA

Peter J. Murphy

JUN

Alberta
ENERGY AND
NATURAL RESOURCES

85-5742/

History
# of Forest and Prairie Fire
Control Policy in Alberta

Peter J. Murphy
Faculty of Agriculture and Forestry
The University of Alberta

January 1985

ENR Report Number: T/77
International Standard Book Number: 0-86499-208-4

FOR ADDITIONAL COPIES OF THIS REPORT, CONTACT:

Alberta Energy and Natural Resources,
Information Centre
Main Floor, Bramalea Building,
9920 - 108 Street
Edmonton, Alberta, Canada
T5K 2M4

Phone: (403)427-3590

©P.J. Murphy, 1985

DEDICATION

This volume is dedicated to the men and women of the forest services and the forestry community through time who have given so much of themselves. The story was written to illustrate policy, but it was people who affected it and put it into practice - husbands, wives and families, all of whom who will have contributed so much of themselves in their own ways to making things happen.

Peter J. Murphy

Table of Contents

Chapter Page

1. FOREST AND PRAIRIE FIRE POLICY - A SUMMARY 1

2. INTRODUCTION 31

3. PRE-EUROPEAN TIMES 33

4. RUPERT'S LAND 40

5. DOMINION ADMINISTRATION OF THE NORTH WEST TERRITORIES 1870-1905 57

   5.1 Before the Railways 1870-1885 57

   5.2 The Early Railway and Settlement Years 1885-1899 74

   5.3 Advent of the Dominion Forestry Branch 1899-1905 102

6. ALBERTA-DOMINION ADMINISTRATION 1905-1930 128

   6.1 Establishing the Forest Reserves 1905-1911 128

   6.2 Building the Organization 1911-1918 167

   6.3 Consolidation and transition 1918-1930 204

7. ALBERTA 1930-1981 227

   7.1 The Depression and Wartime Period 1930-1948 227

   7.2 Postwar Development 1948-1958 250

   7.3 Growth and Technical Change 1958-1980 265

   7.4 Contemporary Policy to 1981 288

8. SUMMARY 300

9. LITERATURE CITED 305

10. APPENDIX 325

   10.1 A. GENERAL REFERENCES 326

      10.1.1 Summary of Forest Administration Agencies 327

      10.1.2 Extracts from 1872 Public Lands Act 333

      10.1.3 Extracts from "Pioneer Days in Bardo, Alberta" 335

      10.1.4 Advice to Settlers Regarding the Handling of Fires 346

      10.1.5 Extract from an article in the Saturday Evening Post (ca. 1910) .. 350

      10.1.6 Recommendations of the CIF Fire Brief - 1954 351

      10.1.7 Trail Standards 354

      10.1.8 Reply of Hon. Ivan Casey, Minister of Lands and Forests 357

10.1.9 Alberta Fire Statistics 1918-1978 (Stocks and Barney 1981) 359

10.2 B. EARLY FIRE ORDINANCES 362

10.2.1 Fire Ordinance 1832 - Council of Assiniboia 362

10.2.2 Fire Ordinance 1835 - Council of Assiniboia 363

10.2.3 Fire Ordinance 1835 - Council of Assiniboia 364

10.2.4 Draft Fire Ordinance 1851 - Council of Assiniboia 366

10.2.5 Fire Ordinance 1852 - Council of Assiniboia 367

10.2.6 Fire Ordinance 1862 - Council of Assiniboia 368

10.2.7 Prairie and Forest Fire Ordinance 1875 - Council of the N.W.T. . 370

10.2.8 Prairie and Forest Fire Ordinance 1877 - Council of the N.W.T. . 372

10.2.9 Prairie and Forest Fire Ordinance 1879 - Council of the N.W.T. . 373

10.2.10 Prairie and Forest Fire Ordinance 1888 - N.W.T. Assembly 374

10.2.11 Prairie and Forest Fire Ordinance 1892 - N.W.T. Assembly 375

10.2.12 Prairie and Forest Fire Ordinance 1893 - N.W.T. Assembly 376

10.2.13 Prairie and Forest Fire Ordinance 1898 - N.W.T. Assembly 377

10.2.14 Prairie and Forest Fire Ordinance 1899 - N.W.T. Assembly 382

10.2.15 Prairie and Forest Fire Ordinance 1903 - N.W.T. Assembly 388

10.2.16 Prairie and Forest Fire Ordinance 1904 - N.W.T. Assembly 390

10.2.17 Prairie and Forest Fire Ordinance 1907 - NWT Assembly 391

11. INDEX 397

LIST OF FIGURES

		Page
Figure 1.	The Plains Indians were well aware of the dangers of prairie fires, but understood how to use fire at times and places of their choosing. (Provincial Archives of Alberta B 1025)	2
Figure 2.	Journals of early European travellers invariably referred to the dreary and melancholy waste of extensive forest fires. Photo by I.C. Tilt 1912. (Alberta ENR)	4
Figure 3.	Prevention of prairie fires and prairie fire fighting were important duties of the NWMP. (Provincial Archives of Alberta B 2233)	7
Figure 4.	Time and distance were important factors in early-day travels. Survey camp at the Elbow of the North Saskatchewan River, 1871. (Public Archives Canada PA 9170)	8
Figure 5.	The advent of logging focused attention on the value of timber, but logging slash was a perennial problem. (Public Archives Canada PA 12942)	10
Figure 6.	With very sparse resources, early efforts were directed towards prevention of fires through warnings of the public. (H.T. Lewis)	12
Figure 7.	The steam-powered thresher resulted in many prairie fires. (Provincial Archives of Alberta A 2058)	15
Figure 8.	Building the organization included construction of ranger stations on the forest reserves. (Alberta ENR)	18
Figure 9.	Fire ranging in the north was largely done by canoe along the major rivers. (Alberta ENR)	20
Figure 10.	The horse was an integral part of forest service operations for transportation of men and supplies. (Alberta ENR)	22
Figure 11.	Fire prevention publicity was emphasized during "Save the Forest Week" and at local fairs, stampedes and parades. (Alberta ENR)	24
Figure 12.	Early towers were built of hand-hewn timbers to keep construction costs to a minimum. (Alberta ENR)	26
Figure 13.	Cree Indians were affected by uncontrolled forest fires but used fire by prescription too. (Provincial Archives of Alberta)	35

Figure 14. Rupert's Land and present-day boundaries. (MacGregor 1972) 41

Figure 15. Prairie fire as depicted by Paul Kane, 1845. (Harper 1971) 53

Figure 16. The sight of the great flow of pine timber past the Parliament Buildings in Ottawa concerned Sir John A. Macdonald. (Public Archives Canada C 19892) 62

Figure 17. N.W.T. administrative districts and present-day Alberta boundary. (MacGregor 1972) 68

Figure 18. The sawmill on Mill Creek, branch of the Oldman River was one of Alberta's earliest forest industries. (Public Archives Canada PA 50772) 69

Figure 19. Canadian Pacific Railway engine 374 pulled Canada's first transcontinental train into Vancouver in May 1887. (Viv Williams) 76

Figure 20. The N.W.M.P. were involved in prairie fire prevention and control - N.W.M.P. Edmonton detachment 1895. (Provincial Archives of Alberta B 1890) 92

Figure 21. Editorial on forest fires in the Beaver Hills, Edmonton Bulletin May 9, 1895. 96

Figure 22. Elihu Stewart was appointed as chief inspector of timber of forestry for the Dominion of Canada in 1899. Photo taken October 1904. (Public Archives Canada PA 91095) 103

Figure 23. Forest ranger in typical lodgepole pine regeneration following a burn in the Rocky Mountains. (Alberta ENR) 109

Figure 24. Meagre budgets led to improvization - fire ranger on temporary lookout, Brazeau Forest. (Alberta ENR) 116

Figure 25. Ranger's cabin showing fire prevention notices, Dog River, Alberta. (Public Archives Canada PA 40629) 120

Figure 26. John Walter's sawmill in Edmonton. The timber supply driven on the North Saskatchewan River. Old Fort Edmonton is in the background. (Provincial Archives of Alberta A 2252) 130

Figure 27. Robert H. Campbell, federal director of forestry 1907-1923. (Canadian Forestry Service). 139

Figure 28. Ranger Stan Clark, University of Toronto graduate, in the Dominion Forestry office at Hinton, 1912. (Provincial Archives of Canada) 141

Figure 29. Rafting logs on the North Saskatchewan River at Edmonton. Increasing demand for timber helped to direct attention to the need fo fire control (Public Archives Canada PA 31757) 143

Figure 30. Periodic intensive burns were a frequent reminder of inadequacies in the fire control organization - part of Saunders Creek burn. Photo by W.N. Millar 1914. (Alberta ENR) 145

Figure 31. Fire prevention poster in Cree syllabic. (Canada 1910) 147

Figure 32. Translation of fire prevention poster. (Canada 1910) 148

Figure 33. The forest reserves provided timber to small local mills. (Alberta ENR) 151

Figure 34. Logs from the Bow River and western tributaries were river driven to supply the large Eau Claire sawmill in Calgary. (Public Archives Canada PA 13337) 156

Figure 35. Timber in the High River valley burned in 1910. (Public Archives Canada PA 46072) 162

Figure 36. Testing the phone line. (Alberta ENR) 164

Figure 37. Rangers on early surveys. (Alberta ENR) 168

Figure 38. Horses were the major means for moving men and supplies during this period. (Alberta ENR) 171

Figure 39. Many miles of corduroy were laid to improve pack trails across soft ground. (Alberta ENR) 173

Figure 40. Railway construction locomotive on the Canadian Northern R.R. (Alberta ENR) 176

Figure 41. Forest fire at Grand Rapids on the Athabasca River. (Public Archives Canada PA 46071) 179

Figure 42. Trail crew constructing grade on a standard trail. (Alberta ENR) 183

Figure 43. Railway speeder patrols helped to control the railway fire problems. (Alberta ENR) 185

Figure 44. The steamer Northland Sun at Athabasca Landing. The Dominion Forestry Branch also used a stern-wheeler for fire patrols. (Provincial Archives of Alberta) 187

Figure 45. Slash from logging operations was a major concern in fire control. (Alberta ENR) 189

Figure 46. Early efforts emphasized the importance of publicity for fire prevention. Dominion Forestry Branch float in Calgary Stampede parade. Photo by The Grant Studio. (Alberta ENR) 194

Figure 47. Prevention also meant posting fire notices along trails and at camp sites. (Alberta ENR) 197

Figure 48. Early campgrounds were commonly developed to congregate people for more effective fire prevention. (Alberta ENR) 200

Figure 49. Causes of forest fires on lands administered by the Dominion Forestry Branch 1914-1918. (Lewis 1920) 205

Figure 50. Edmonton Bulletin headline about the destruction of Lac La Biche in the 1919 burn. 208

Figure 51. Aircraft base at High River - planes first used on fire patrols in 1920. (Alberta ENR) 210

Figure 52. Coliseum lookout - one of the early mountain lookouts near Nordegg. (Alberta ENR) 213

Figure 53. Packing poles for construction of coliseum lookout. Lumber was commonly packed in a similar way. (Alberta ENR) 214

Figure 54. Ernest H. Finlayson, director of the Dominion Forestry from 1924 to 1936. (Canadian Forestry Service) 216

Figure 55. The 1926 burn along the Banff-Windermere highway was judged a loss by the park superintendent although it was judged "an improvement from the scenic point of view." (Provincial Archives of Alberta P 4732) 219

Figure 56. Early roads on the forest reserves commonly went as far as ranger stations, with horse trails leading out from there. (Alberta ENR) 221

Figure 57. T.F. (Ted) Blefgen with dog and a companion on the Rocky Mountains Forest Reserve before his appointment as Alberta director of forestry in 1930. (Alberta ENR) 229

Figure 58. Land clearing for agriculture and brush burning posed perennial forest fire problems. (Provincial Archives of Alberta A 7753) 233

Figure 59. Fire ranger on patrol on the Peace River near Vermilion Chutes, 1936. (Alberta ENR) 235

Figure 60. The Fire Sign became a prominent landmark on the lower Athabasca River. (Alberta ENR) 235

Figure 61. Early fire fighting training exercise near Slave Lake organized by Ted Blefgen. (Alberta ENR) 238

Figure 62. The availability of bulldozers helped to solve some of the problems of manpower shortages. Grading outfit on the Red Deer road. Photo by Jack Bell. (Alberta ENR) 245

Figure 63. The Johnson H.O.K. fire pump was judged the best pump in the last 1930s. Demonstration for John Harvie, deputy minister of Lands and Mines, Jim Hutchinson, assistant director of forestry, R.G. Reid, minister of Lands and Mines, and Ted Blefgen, director of forestry. (Alberta ENR) 246

Figure 64. The original Forestry Training School at Kananaskis from 1951-1959 was the old library of the former prisoner-of-war camp. (P.J. Murphy) 255

Figure 65. Eric S. Huestis, director of forestry, lecturing to first FTS class at Kananaskis in 1951. The dusty coal heaters, drafty floors and packrats contributed to a less-than-ideal teaching environment, but a great deal of effective instruction was achieved. (Alberta ENR) 257

Figure 66. Generalized illustration of the major features of the original 1957 composite forest cover map. 259

Figure 67. Norman A. Willmore, minister of Lands and Forests 1955-1963, strongly supported improvement of fire control capability as well as a stronger general forest management program. (Provincial Archives of Alberta PA 1664/1) 263

Figure 68. The Fleet Courier CF-IYZ was the start of the present aircraft fleet within the Alberta Forest Service. (P.J. Murphy) 266

Figure 69. A Bell helicopter acquired shortly after demonstrated on important versatility in fire and forest management applications. (Alberta ENR) 268

Figure 70. The fire tower network was greatly expanded during the 1960s to improve detection, enhance radio communications and provide weather data. The fibreglass cupola was developed by the AFS. (Alberta ENR) 271

Figure 71. The new Forestry Training School at Hinton (near Forest Technology School) was officially opened in October 1960 by Hon. N.A. Willmore. Photo shows E.S. Huestis, director of forestry speaking, H.G. Jensen, deputy minister, N.A. Willmore, W.A. Switzer, mayor of Hinton, Mrs. Willmore, and the Murphy family. (FTS) 272

Figure 72. The first Junior Forest Wardens club in Alberta was formed in Hinton in 1955 by staff at Northwestern Pulp and Power Ltd. Fire training was part of the syllabus. (Alberta ENR) 274

Figure 73. In 1963 Robert G. Steele was appointed director of forestry, shown here with his two predecessors T.F. Blefgen and E.S. Huestis. (E. Nyland) 276

Figure 74. W.C. (Rocky) Hales, head of enforcement for Alberta Fish and Wildlife discussing fire law enforcement training at Hinton with Peter Murphy, as fire training programs were extended at the FTS. (F.T.S.) 277

Figure 75. C.F. (Frank) Platt encouraged considerable technical innovations while he was head of fire control operations, here demonstrating para-cargo delivery. (Alberta ENR) 279

Figure 76. Fred W. McDougall, presently deputy minister of Renewable Resources, was named director of forestry in 1973. (Alberta ENR) 287

Figure 77. J.A. (Al) Brennan was appointed assistant deputy minister responsible for the Alberta Forest Service in 1978. (Alberta ENR) 287

Figure 78. Fire suppression priority zones. 292

Figure 79. Fire statistics for Alberta 1927-76. (Kiil 1979) 297

Figure 80. Constant-dollar (1981) costs of forest service expenditures not including fire fighting. 301

Figure 81. Constant-dollar fire-related costs of pre-suppression and fire fighting. 303

ACKNOWLEDGMENTS

The idea of compiling this history was inspired by many rangers and other older hands in the Alberta Forest Service who helped me ease into the organization when I first joined it in 1954, and who made the work so enjoyable during my 19 years of pleasant working association with them. Their tales of the old Dominion days and the tough times of the '30s and '40s -- of patrols by horse, boat, dog and foot, of difficult fires that finally succumbed, of improvising and scrounging to get the job done in spite of obstacles, and of pride of accomplishment -- were not only colorful but were object lessons in what could be done through dedication and determination. I was particularly inspired by Harry Edgecombe who eloquently illustrated through one of his own stories - "How can you tell where you are going if you don't know where the hell you've been?"

This account is an attempt to describe where we are coming from in fire control. The original paper was completed in February 1982. It was so engrossing and the research turned up so many interesting leads that demanded attention, that the original was substantially augmented for this edition. The story is by no means complete, but it has to stop somewhere. Our major forest access routes have followed a progression from game and Indian trail to forestry pack trail, wagon road, truck trail, and forestry road to paved highway. In an analogous way I hope this pack-trail-level story will encourage others to improve on it in the years to come to bring out the full story.

The present Forest Service organization is very much a product of teamwork, and so many have contributed to advances in the field. I regret that not more of you could have been identified by name, but be assured your spirit is very much manifested in the shape of the organization and its achievements.

This paper was originally prepared as part of a directed study for Dr. J. V. Thirgood, Faculty of Forestry at the University of British Columbia. His suggestions and encouragement are appreciated.

The Alberta Forest Service sponsored the printing of this story, and improved it substantially through the auspices of Jim Pearse and his group and associates - Marilyn Brown who reviewed the original story, Maryhelen Vicars who edited the text, Maureen Beristain who put together the index, Laurie Bailey who designed the cover, and Judy Byers who helped search for photographs - all enriching contributions.

The text was typed, revised and reworked tirelessly by Mimi Hui of the Department of Forest Science at the University of Alberta. Her textform skills and patient forbearance are very much appreciated, as are those qualities of Linda Ehrler and Judy Jacobs who worked so diligently and extra hours on the final edition.

1. FOREST AND PRAIRIE FIRE POLICY - A SUMMARY

Fire is a natural phenomenon on the land. It has been pervasive in Alberta since vegetation returned after the retreat of the continental glaciers.

The advent of man brought about changes in the frequency of fires, increasing fire occurrence in earlier times and, more recently, decreasing fire frequency through fire control activities in some locations. At the same time, man has been affected by forest and prairie fires - either directly by fire itself, or by the subsequent ecological effects of post-fire succession.

Man's response to fire at any one time is represented by "fire policy". Policy in earlier times must generally be inferred, since there are few recorded statements of policy as such. This paper reviews the response of man to fire through 12 periods of history and has postulated "fire policy" for each of them. This summary provides an overview, or trail guide, to give a better idea of the flow of events.

1. Pre-European Times

The setting in these times was one of native Indian use of the land. That use was characterized by relatively low-intensity land-use pressures. The lifestyle was largely nomadic with relatively small groups of people travelling in response to game movements, occurrence of food plants, and seasonal considerations. Wildfires were a vicissitude, a phenomenon to be avoided by escape from its paths, movement to safe areas or, when necessary, defense through backfiring.

Several anthropologists have made a convincing case that Indians, and Metis in later times, used fires in certain places and at chosen times, to create conditions more favorable to maintaining their ways of life. Policy, if it were to be stated as such, would have been to use fire seasonally as it appeared appropriate, and to avoid or fight against wildfires as necessary. On the prairie grasslands and in the parklands, the effects of deliberately-set fires could have been extensive through the continuity of fuel in dry periods. In the northern boreal forests the effects were probably more commonly confined to specific meadowland or parkland types, although escaped fires into adjacent forests were probably not uncommon.

Figure 1. The Plains Indians were well aware of the dangers of prairie fires, but understood how to use fire at times and places of their choosing. (Provincial Archives of Alberta B 1025)

2. Rupert's Land - 1670 to 1870

This 200-year span was generally a time of constancy except for increasing European settlement during the last 60 years. Indian use of the land continued essentially as described previously. The economic opportunities provided by the fur trade resulted in a shift of attention to trapping of fur-bearing animals, and may have resulted in increased attention to maintaining particular habitats, such as burning to sustain early successional stages as habitat for beaver and muskrat, and care to exclude fire from mature forests which supported squirrel and marten.

The Hudson's Bay Company and the North-west Company were very much exploitation-oriented. They operated with a profit motive and practiced virtually no management either of game or of fire, depending on exploration to provide new areas to produce fur. There was a general perception of vastness of resources. Few people had concerns about resource depletion except on a local scale and when the buffalo herds became sparse, about the mid-1800s.

The accounts of early European explorers and travellers invariably referred to the fury and devastation of fires, and to the dreary and melancholy waste left behind. A few individuals commented on the ecological effects of fire and post-fire succession of plants and animals, but the references invariably depicted fire as an undesirable phenomenon. These observations reflected the prevailing European view and contributed to the single-minded policy of fire control which prevailed for many years.

A major change in attitude toward fire developed about the time of Selkirk's settlement along the Red and Assiniboia Rivers in 1811. The threat from fire became more acute with permanent settlement and the associated values-at-risk such as human habitation, structures, livestock and their required hay crops. Concerns led to the first forest and prairie legislation in western Canada, passed by the Council of Assiniboia in 1832. Emphasis in the early ordinances was clearly on prevention of man-caused fires through penalties imposed for careless ignition. Subsequent amendments reflected the persistent difficulty of enforcement. Later changes in the law also introduced requirements for fire-guarding of buildings and haystacks - the first action-oriented approach to fuel management to prevent losses. However, there was no evidence of organized fire control at that time.

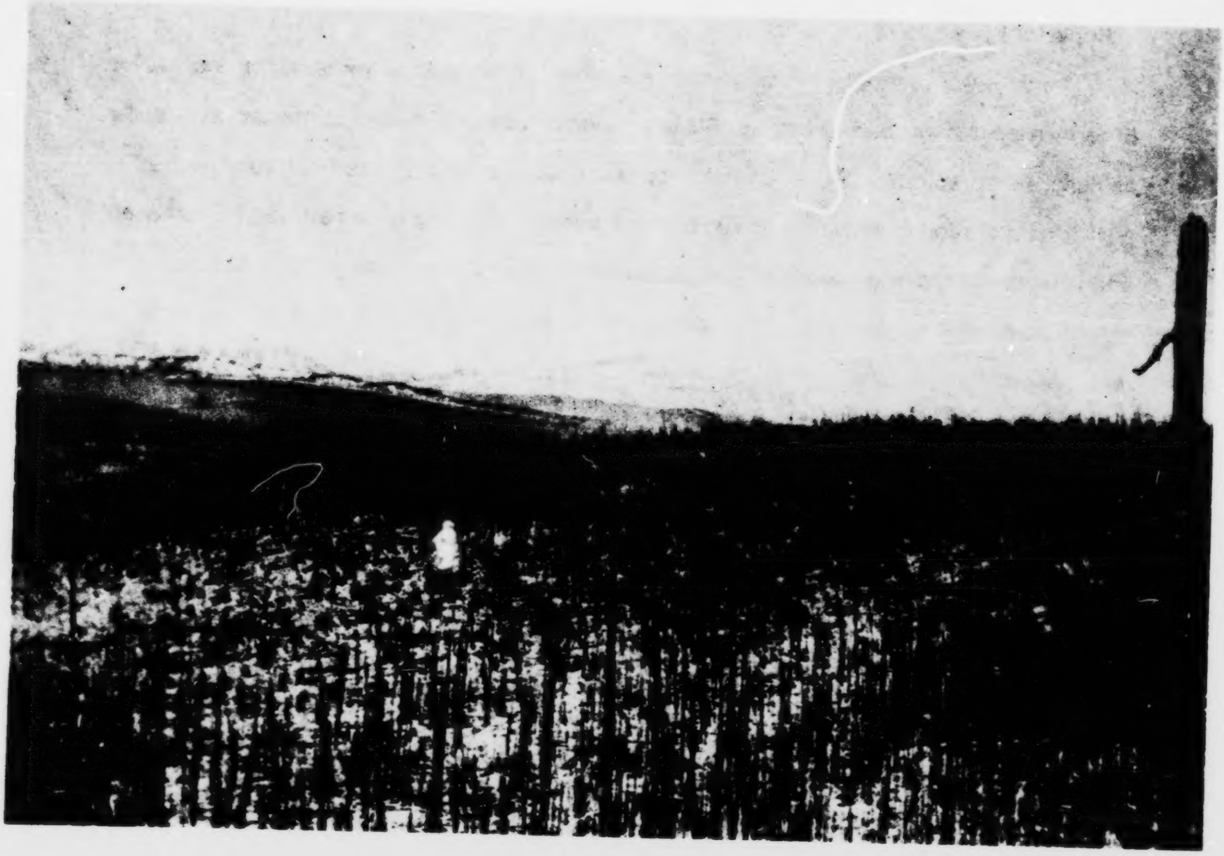


Figure 2. Journals of early European travellers invariably referred to the dreary and melancholy waste of extensive forest fires. Photo by I.C. Tilt 1912. (Alberta ENR)

Political events culminated in the Rupert's Land purchase, formation of the North West Territories,[1] and the beginning of organized governance by a government rather than control by a company.

3. Dominion Administration of the North West Territories - 1870 to 1905

This 35-year period was characterized by Sir John A. Macdonald's compelling thrust to extend dominion over all of British North America, including construction of a trans-Canada railway and populating the new North West Territories. The aim of government was on development, and was reflected in the generation of Canadian nationalism, extensive land survey programs, and promotion of settlement. Administrative bureaucracies were gradually developed, first within the federal Department of the Interior, and later within a territorial administration as well. Although Macdonald did not remain in power for the entire period, the policy thrust remained essentially the same.

The problems and responses in Assiniboia were characteristic of what has generally followed to the present. With the arrival of more permanently-located European settlers, the number of fires increased, and the settlement structures and crops increased the values at risk from fire. Initial policy efforts were focused on prevention, and on prosecution of offenders. Development of control effort gradually emerged as the limitations of prevention became evident, and as people, funds, and infrastructure made control effort possible. Subsequent increases in fire control effort were usually made as recurring years of extreme fire problems demonstrated inadequacies in control capability.

a. Before the Railways - 1870 to 1885

Extensive prairie fires were frequently reported even before the railways arrived, the rate of burning accelerated by increased human activities. The North West Territories Act of 1875 provided for a new governing council of the N.W.T., and an ordinance for the prevention of forest and prairie fires was passed at their first session in 1877. The North West Mounted Police[2] force had been formed in 1873 and soon became involved in fire control, especially in areas of settlement, but their sparce manpower greatly limited their effectiveness. The response to prairie fire problems was strong in legislation but weak in enforcement capability. However, the situation was receiving attention.

---

[1] Editor's note: The North West Territories were also referred to at different times as the North-West Territories and the Northwest Territories.

[2] Editor's note: The Northwest Mounted Police force was referred to variously as the Northwest Mounted Police, the North-West Mounted Police, and the Royal North West Mounted Police at different periods of its history.

Growing Canadian concern about timber supply was emerging during this period. There was also a recognized need for wood on the prairies to aid in settlement and development which led to two major policy initiatives - prevention of fires and tree planting. The Dominion Lands Act of 1872 enabled the federal government to set apart timber lands reserved from sale and settlement, authority later used to establish the first forest reserves. This act also required timber operators to prevent the origin and spread of fires.

The Department of the Interior was formed in 1876 with primary responsibility for development and management of the North West Territories. A Crown timber agent was located in Winnipeg in 1879 within the Timber, Mines and Grazing Branch. His responsibilities were primarily to collect timber royalties, and only later was he involved with fires. A Crown timber agent was established in Edmonton in 1882, and the following year the first two forest rangers were appointed in Alberta, one each in Edmonton and Calgary. These people were also largely concerned with collection of timber dues.

The report of the first forestry commissioner, J.H. Morgan, in 1884 recommended more attention to protection and tree planting. An amendment to the Dominion Lands Act that year permitted the Governor in Council to reserve lands on, adjacent to, or in the vicinity of the Rocky Mountains for the protection of forest trees and maintenance of water sources.

These were formative years in which problems were recognized and some of the easier legislative and administrative solutions were tried.

b. The Early Railway and Settlement Years - 1885 to 1899

A persistent dichotomy in point of view emerged during this period. Opposition members of parliament repeatedly expressed concerns about the cost of administration of the North West Territories and the paucity of financial returns. In contrast, there were increasing pleas by Department of the Interior staff in their annual reports for additional resources to develop an administrative organization for enforcement and the other fire

AND PLACE History - Geography VISUAL
N.W.M.P. CALGARY.
1883.
SERIES
VIII = X
No 1228..

Figure 3. Prevention of prairie fires and prairie fire fighting were important duties of the NWMP. (Provincial Archives of Alberta B 2233)

Figure 4. Time and distance were important factors in early-day travels. Survey camp at the Elbow of the North Saskatchewan River, 1871. (Public Archives Canada PA 9170)

control and resource management tasks. The government had not yet developed a central agency to give specific attention to fires and problems of forest management.

The Crown timber agents became involved with fires, but largely through encouragement of prevention activities and enforcement of fire laws. Dues on Crown timber were reduced for fire-killed timber to encourage its use before the cutting of green timber. The Dominion Timber Regulations were amended in 1898 to include requirements for disposal of logging debris and to require timber operators to share the costs of forest protection. Some timber reserves were established by order-in-council, although there were some political concerns about tying up lands which might otherwise be available for exploitation through patronage grants. The objective of forest reserves was to remove the best forest lands from settlement and to concentrate protection efforts on them.

Prairie fires were a persistent and growing problem. The Department of the Interior first discussed the need for firebreaks, fire guardians and organized volunteer fire brigades in its annual report in 1886. That same year the Council of the North West Territories passed an ordinance establishing fire districts and appointing fire guardians The North West Mounted Police force was spread very thinly throughout the country, making it difficult for them to effectively enforce the fire ordinances. They also reported that the justices of the peace were usually reluctant to prosecute. Settlers evidently had a fatalistic approach to prairie fires, confounding efforts to encourage plowing of fuelbreaks.

Construction of the railway led to additional fire starts during the construction period and during railway operation. Court records revealed a continuing search for proper ordinances through which prosecutions and convictions of the railways could be effectively done.

Irrigation in southern Alberta using water from the mountains and foothills was first mentioned in 1893. This gave impetus to the establishment of a forest reserve along the east slopes to protect the water supplies.

A first reference to the economics of fire control was made by William Pearce in 1896. He was certain that if figures could be properly obtained they would show conclusively that expenditures on prevention and control would more than be repaid.

Figure 5. The advent of logging focused attention on the value of timber, but logging slash was a perennial problem. (Public Archives Canada PA 12942)

c. Advent of the Dominion Forestry Branch - 1895 to 1905

The persistence of fire problems aggravated by an influx of settlers, increasingly evident need for more effective federal administration of forest reserves, and possibly a change in philosophy with a change in federal government in 1896, led to establishment of the Dominion Forestry Branch in 1899 and appointment of Elihu Stewart as chief inspector of timber and forestry. Stewart was a patronage appointee, but well chosen. He was concerned with fire and began organizing a forest service. He also recognized the two persistent major programs - protection and tree planting.

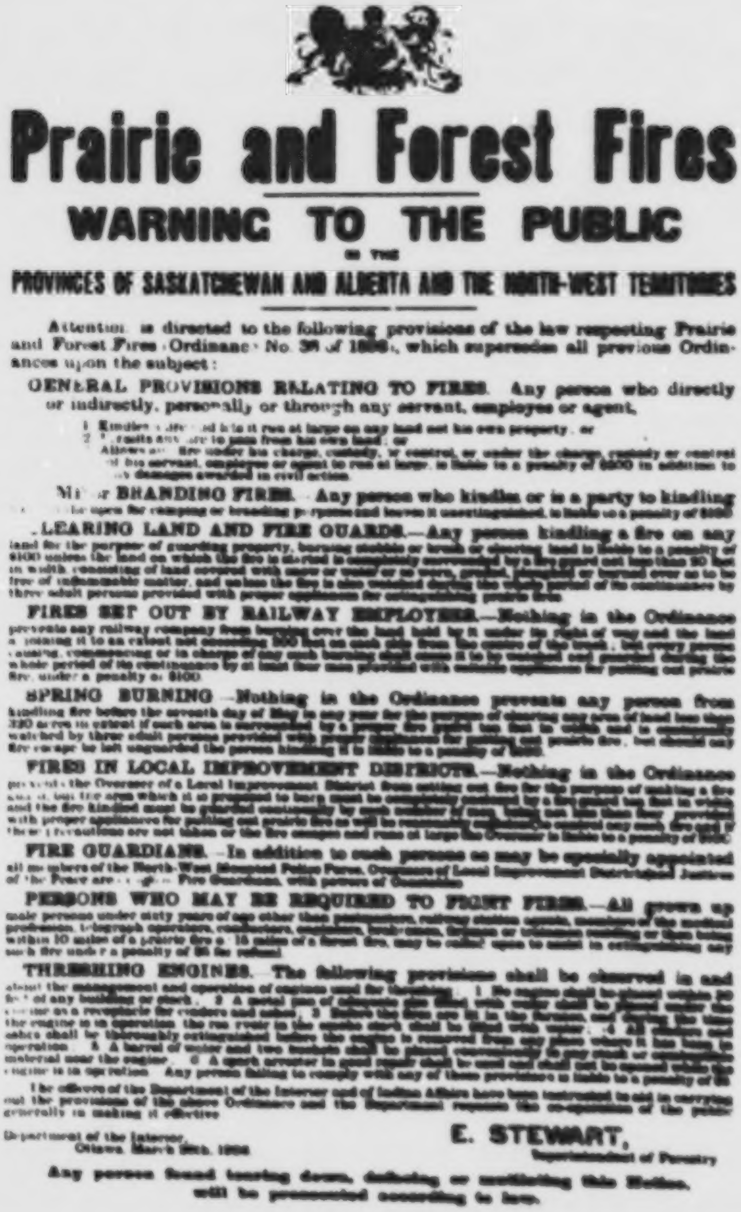
The philosophical dichotomy prevailed - House of Commons debates showed sustained concerns about costs and proliferation of staff, while the annual reports written by department staff reflected the evidently inadequate resources to protect and manage the area. This applied also to the N.W.M.P. The situation was such that Stewart included a discourse in one report to explain why forestry was a legitimate function of government.

The minister of the Interior was committed to act on the protection and tree planting problems. He indicated in 1900 that seven to eight additional people would be needed for Manitoba and the North West Territories to serve as fire guardians and to encourage tree planting - a rather optimistic view. By 1903 there were four fire rangers in Alberta, two each under the forest rangers in Edmonton and Calgary. Their work, as can be imagined, was largely prevention-oriented.

There were repeated references to European forestry and forest administration as examples of what should take place in the N.W.T.. The need for a Canadian forestry school was first discussed in 1901. Stewart also recognized the need for a forest inventory to determine the nature and extent of the forest resource.

He initiated formation of the Canadian Forestry Association in 1900 to enhance public support for action on forestry matters and support of forestry programs.

Fire rangers were employed entirely on a casual basis, hired whenever the fire hazard increased, and released within the season whenever it abated. That practice, along with the ungenerous pay of $3 a day with the ranger providing his own horse, resulted in difficulties in recruitment and holding of staff.



Prairie and Forest Fires

WARNING TO THE PUBLIC

IN THE

PROVINCES OF SASKATCHEWAN AND ALBERTA AND THE NORTH-WEST TERRITORIES

Attention is directed to the following provisions of the law respecting Prairie and Forest Fires Ordinance No. [illegible] of [illegible], which supersedes all previous Ordinances upon the subject:

GENERAL PROVISIONS RELATING TO FIRES. Any person who directly or indirectly, personally or through any servant, employee or agent, [illegible]

[illegible] BRANDING FIRES.—Any person who kindles or is a party to kindling [illegible]

CLEARING LAND AND FIRE GUARDS.—Any person kindling a fire on any [illegible]

FIRES SET OUT BY RAILWAY EMPLOYEES.—Nothing in the Ordinance [illegible] under a penalty of $100.

SPRING BURNING.—Nothing in the Ordinance prevents any person from [illegible]

FIRES IN LOCAL IMPROVEMENT DISTRICTS.—Nothing in the Ordinance [illegible]

FIRE GUARDIANS.—In addition to such persons as may be specially appointed [illegible]

PERSONS WHO MAY BE REQUIRED TO FIGHT FIRES.—All grown up [illegible]

THRESHING ENGINES.—The following provisions shall be observed in and [illegible]

The officers of the Department of the Interior and of Indian Affairs have been instructed to aid in carrying out the provisions of the above Ordinance and the Department requests the co-operation of the public generally in making it effective.

Department of the Interior,
Ottawa, March [illegible]

E. STEWART,
Superintendent of Forestry

Any person found tearing down, defacing or mutilating this Notice, will be prosecuted according to law.

Figure 6. With very sparse resources, early efforts were directed towards prevention of fires through warnings of the public. (H.T. Lewis)

The prairie fire problem continued. Prosecutions were made under the territorial ordinance but the pace of settlement seems to have overwhelmed the prevention and enforcement resources. With the extension of agriculture, the N.W.T. council recognized that the new steam-powered threshing engines were also a hazard, and included regulations about them in their 1903 ordinance. Railway fires continued to be a major problem; several court appeals by railway companies successfully challenged the authority of the N.W.T. ordinances.

Increasing populations and resultant political activities led to a request by the N.W.T. council for provincial status through one new province of Assiniboia with control of its natural resources. However, in 1905 parliament instead established three provinces and retained control of natural resources within the federal government. This led to a form of dual administration for the next 25 years.

4. Alberta - Dominion Administration - 1905 to 1930

During this time the federal government administered natural resources including the forests and minerals. The federal thrust was to focus attention on forest reserves which represented the major high-value timber areas on lands not suited for agriculture and to provide some degree of fire control in the northern forests. The province assumed responsibility for prairie fires in settled areas. However, responsibility for fire problems in areas of active settlement fell between the federal and provincial agencies creating control problems which were slow to be resolved.

Toward the end of this period efforts were designed to try to get ahead of anticipated problems. During this evolutionary time technology was increasingly applied, usually increasing both cost and effectiveness.

a. Establishing the Forest Reserves - 1905 to 1911

Greatly increased immigration and settlement along with the economic activity which it stimulated brought new pressures on the forest resources through increased fires and demands for timber and land. The still-new Dominion Forestry Branch responded to the fire and timber concern by sustained planning to try to prevent and control fires. In general, the strategy was to focus attention on the forest reserves while extending fire control activities into northern forests through patrols along the major rivers.

Two major events in 1906 reflected government and public concerns. The first was the National Forestry Conference convened by Sir Wilfred Laurier. It was probably the most important gathering of its kind in Canada to that time, focusing public attention on national problems in forestry and forest protection. The second event was passage of the Forest Reserves Act which consolidated reserves previously established under orders-in-council, and created many new ones. It reserved the areas from settlement and provided for their administration by the Dominion Forestry Branch. The intent was to preserve the forests and conserve water supplies through forest protection. The act also provided for transfer of the timber and royalty collection functions from the Timber, Mines and Grazing Branch to the Dominion Forestry Branch on the reserves, but this was evidently not done and created a dichotomy which led to fire hazard problems through inadequate treatment of logging debris. Despite increased attention, House of Commons debates still reflected concerns about increases in staff and cost.

Given this focus, the emphasis in Dominion Forestry Branch activities was on identifying and surveying new reserves, and administration of the existing ones. The surveys revealed the extent of previous fire losses which lent further impetus to placing additional land under reserve status.

Some interesting suggestions and developments emerged during this period. In 1906 the Forestry Branch advocated surveys of land before settlement was permitted, in order to distinguish lands of agricultural capability from those which should be left in forest reserves - both to preserve forested lands and to enhance the success of settlers. The first professional forestry program in Canada was established at the University of Toronto in 1907, followed in 1908 by one at the University of New Brunswick. The Forestry Branch began to strongly advocate the appointment of permanent staff for ranger positions and provision of technical training facilities for them. Preventive spring burning was used in 1909 to reduce fire hazards around the forest reserves. One of the Forestry Branch staff gave the first talk on forestry to school teachers in 1910, hoping thereby to reach school children with a conservation message.

Grazing on the forest reserves was advocated as a fire prevention measure. Cattle reduced dry grass fuel accumulation, created trails which could serve as fuelbreaks, and

LAMOUREUX THRESHING CREW
1905

Figure 7. The steam-powered thresher resulted in many prairie fires. (Provincial Archives of Alberta A 2058)

the leases encouraged ranchers to become more concerned about fire control to maintain the grazing resource.

Administrative problems began to emerge as the organization developed. Recruitment of rangers with appropriate qualifications to the job became difficult. The need also became evident for such supporting facilities as lookouts, trails, communication lines, tool caches, and cabins. Forest rangers were still seasonal, although it was recognized that they should be permanent, assigned to specific districts, live near to the reserve and should make frequent patrols of their areas.

The Forest Reserves and Parks Act of 1911 consolidated the forest reserves on the Rocky Mountain foothills, and marked the beginning of a period of buildup of fire control capability on the forest reserves.

The major causes of fire were railways, settlers, and campers and travellers, in that order. The prairie fire problem continued, but began to diminish in settled areas as development of roads and fuelbreaks broke up fuel continuity, and establishment of fire districts and enforcement aided in prevention and suppression. However, in areas of active settlement, frequent fire escapes into forests were a concern, but justices of the peace were still lenient in prosecuting fire offences.

Fiscal resources for fire prevention and control were provided in an incremental manner in response to demonstrated inadequacies. This was illustrated in 1909 when the number of fire rangers in Alberta was increased to 34 from 12 the previous year. The year of 1908 had been described as a "bad year". The year 1910 was also a difficult year which resulted in a further increase to 45 fire rangers in Alberta in 1911.

Formation of the Commission on Conservation in 1909 was another reflection of public interest in and concern about natural resources. Chaired by the former minister of the Interior, Clifford Sifton, the commission conducted many studies which focused attention on problems in forest protection and forest conservation. These studies and their attendant representations assisted in increasing levels of support for forestry.

In the Department of the Interior annual report for 1910, H. R. MacMillan made the following comment:

> "The measures adopted to protect the forests from fire are now generally understood. They are the removal by education or legislation adequately enforced of the causes of fires, the organization of a patrol to find and

> extinguish such fires which will inevitably start, and the improvement and organization of the forest areas so as to render most efficient the efforts of fire fighters and to minimize the chances of any fires getting beyond control."

MacMillan thereby captured the essence of fire control planning. Actions from that time to the present have been taken to try to achieve and refine those measures with the object of controlling fires.

b. Building the Organization - 1911 to 1918

Once it had been determined that a system of forest reserves represented the best course of action, activity was directed toward building the organization needed for their proper protection and administration. As before, there may have been a dichotomy in perception between the House of Commons which was still concerned about costs and proliferation of staff in government service, and the Dominion Forestry Branch which by now had selected the U.S. Forest Service as its model and pursued the "National Forest" concept with considerable zeal.

Surveys for new forest reserves continued in Alberta, culminating in an extension to the Rocky Mountains Forest Reserve and establishment of the Lesser Slave Lake Forest Reserve in 1913.

Work of the Forestry Branch evolved into three major areas of administration. The first of these was the forest reserves. Developments there included organizing defined districts and permanent rangers on them, with supervisors in charge of the forests. Trail standards were set and stopover patrol cabins were constructed along the trails at intervals representing reasonable daily travel by horse. Training for forest rangers was still advocated, with the first formal course finally proposed in Vancouver in 1917-18 for returning veterans. Fire prevention was still emphasized, but prevention activities in the national parks during this time showed the greatest innovative approach. Recreation in both forest reserves and national parks was tempered by fire prevention considerations. The approach was to aggregate people on safe camping areas where fuels were removed and trees pruned to prevent fires from spreading and escaping outside the designated areas, creating the first designated campgrounds.

The second major area of activity was extending fire ranging in the northern forest areas outside the reserves. These comprised boat patrols on the Athabasca, Slave and

Figure 8. Building the organization included construction of ranger stations on the forest reserves. (Alberta ENR)

Peace river systems using canoes and, later, steamers.

The third work area was railway inspecting to prevent fires on operating lines, and to closely inspect lines under construction. The Grand Trunk and Canadian Northern Railways were closely monitored during their construction west from Edmonton with the result that few fires occurred. On the other hand, reports indicated that construction of the Edmonton Dunvegan and Peace River Railway presented great problems.

At a national level the Forestry Branch entered the field of research in 1917 with establishment of the Forest Products Laboratory, followed immediately after with forestry-oriented studies at the Petawawa Forest Experiment Station, studies which included work on fire behavior. Forest research was to become a major activity of the Forestry Branch following the 1930 transfer of resources.

The provincial administration during this period of duality evidently had not developed its own prairie and forest fire control capabilities to the same extent. Dominion Forestry Branch staff complained that brush disposal on provincial roads created fire hazards and that it was difficult to get cooperation to improve the situation. Dominion staff also commented that settlers in forested areas berated them for not fighting fires in those areas, while in fact the province had the responsibility for settlement areas and would not appoint Forestry Branch staff as fire guardians under provincial statute. There may have been lingering resentment among provincial authorities about federal retention of natural resources.

The railway fire problem persisted. New legislation was finally passed by parliament as an amendment to the Railways Act in 1912 which empowered the Railway Commission to require companies to employ fire rangers, require maintenance of patrols on the railway lines and make the railway companies liable for damage caused by fires started by locomotives. That legislation had also been advocated and supported by the Commission of Conservation. The new legislation at last made it possible to obtain convictions against the railways.

c. Consolidation and Transition - 1918 to 1930

A plateau of sorts appeared to have been reached at this time within the Dominion Forestry Branch. The work consisted essentially of administration of the forest reserves,

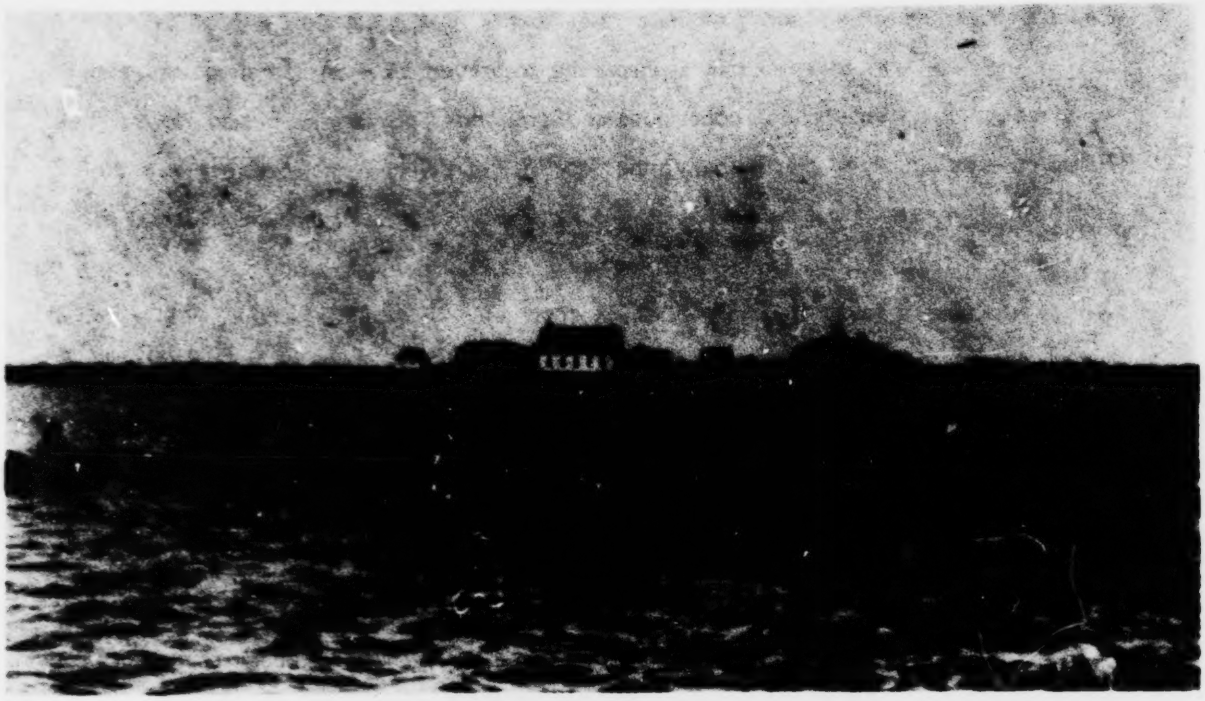


Figure 9. Fire ranging in the north was largely done by canoe along the major rivers. (Alberta ENR)

fire ranging outside the reserves, and prevention of railway fires as outlined before. Refinements and improvements continued to be made to the essential components of the forest protection activities - including construction of roads, trails, communications lines and buildings. About 1925, when the consolidation of the forestry program appeared to be well in hand, discussions about transfer of natural resources to the provinces began in earnest. Within a few years it became evident that a transfer would take place and the Dominion Forestry Branch would lose its forest management responsibilities in the provinces. Despite many serious reservations among Forestry Branch staff, the transition ultimately went smoothly.

Major causes of fire during this time were campers, settlers and railways. The large number of fires of unknown origin reflected the relatively small staff numbers available to conduct investigations. Staffing levels in 1918 resulted in an average district size of 209,000 acres on the forest reserves, while on the Dominion lands outside the reserves the average was 1.2 million acres, almost six times greater.

The 1919 fire year was termed "disastrous" with extensive burns reported in the forest reserves and in eastern Alberta and western Saskatchewan. The fires highlighted the need for detection, faster communication, particularly phone line construction, and for quicker access to fire areas.

The use of aircraft for fire patrol - detection and scouting - began in 1920 through cooperation of the Air Board of Canada. It was deemed so successful that it was expanded and maintained through to 1930. The first lookout cabin was constructed in 1921, the same year that the first formal fire control plan was developed. That year also saw the first seasonal ranger school for training of new staff for summer work.

A joint federal and provincial conference on forest fire protection was convened in January 1924 by the minister of the Interior during which the fire problem in Canada was "exhaustively discussed". The operating department of the Canadian National Railways also held a conference on forest fire protection at which many of the provincial and federal fire protection officers were present. The national attention led to sustained and increasing attention to the problem.

A major step in Alberta-federal cooperation took place in 1921 when Alberta amended the Forest and Prairie Fire Protection Act to give Dominion Forestry Branch staff

Figure 10. The horse was an integral part of forest service operations for transportation of men and supplies. (Alberta ENR)

and fire rangers *ex officio* authority to enforce provincial legislation. Included in the amendments were strengthening of the power of fire guardians and increased penalties for infractions.

Forest fire research began about 1926 within the Dominion Forestry Branch. Initial focus was on how fires started, and the relationships of fire ignition and spread to weather. Additional weather stations were established on forest reserves.

A fire permit system for burning of settler's slash was introduced in 1928. During this time the Dominion Forestry Branch continued its public education activities through speaking tours. A "Save the Forest Week" was introduced in 1925, precursor to the present National Forest Week.

Provincial representations led to the Transfer of Resources Act in 1930. The transfer was made effective Oct. 1, 1930, in Alberta. The Dominion Forestry Branch shifted its activities largely to research and information gathering.

5. ALBERTA - 1930-1981

The young province was evidently determined to continue the forestry program as developed by the federal administration. There appeared to be a smooth transition of staff and activities from federal to provincial operation. Unfortunately, the developing depression caused severe financial problems within the province and program cuts and staff layoffs resulted. Operation of the Alberta Forest Service and the fire control organization was a struggle until the late 1940s. At that time the petroleum and natural gas industry along with a generally increased level of economic activity brought the forest resources into greater demand, and generated increased provincial revenues which made more protection and management action financially possible. The increased access as a result of this activity and greatly extended agricultural development resulted in substantially increased fire problems. The basic approach to forest fire control outlined by MacMillan in 1910 remained, but a great deal of new technology and greater sophistication in planning and administration were brought to bear.

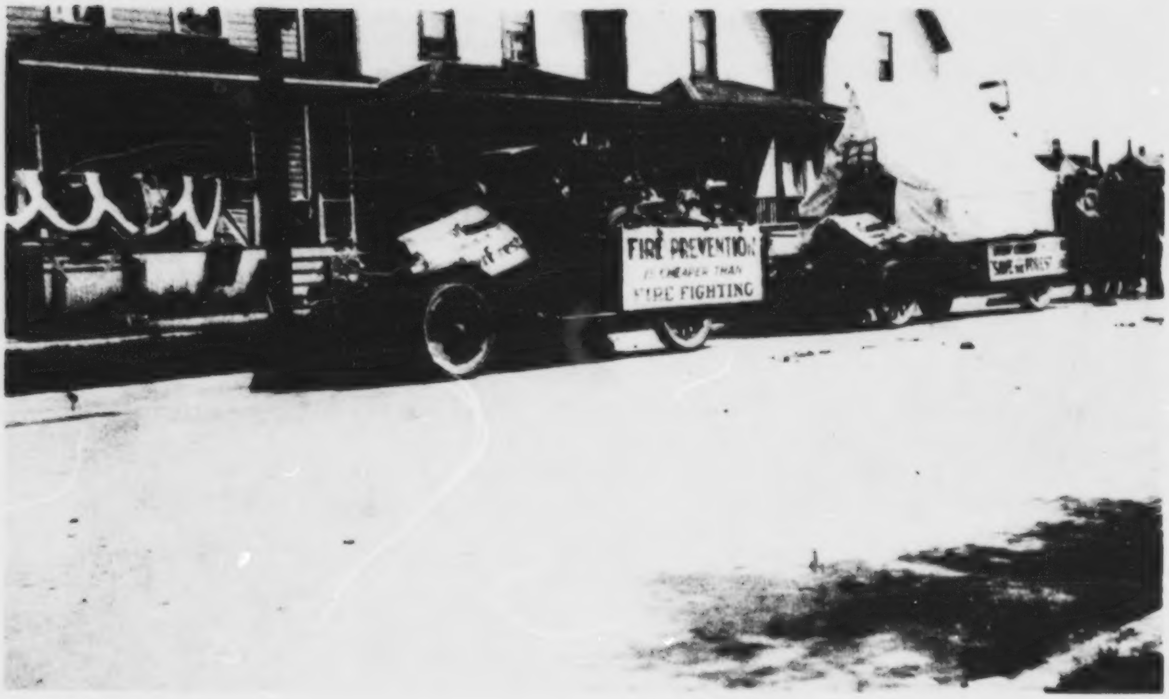

FIRE PREVENTION
IS CHEAPER THAN
FIRE FIGHTING
SAVE the FOREST

Figure 11. Fire prevention publicity was emphasized during "Save the Forest Week" and at local fairs, stampedes and parades. (Alberta ENR)

a. The Depression and Wartime Period - 1930 to 1948

With the transfer of resources Alberta took over the responsibility for protection and administration of 19,463 square miles of established forest reserves and what was then known as the "Edmonton Fire Ranging District" comprising 142,802 square miles of the northern forest. During the 1932-33 fiscal year, financial difficulties made it necessary to cut the staff to about one-third its former strength. Five permanent staff and 32 seasonal rangers were left employed on the forest reserves, while eight permanent timber inspectors and 48 seasonal rangers handled the rest of the province.

Basic emphasis was focused on prevention of fires, since the ability to respond effectively to burning fires was limited. In 1932 the Alberta Forest Service assumed responsibility for the Prairie Fires Act which included authority for the fire permit system. Settler fires remained a serious problem throughout this period and the next. Fire permits were initially available from many sources including honorary fire guardians, an arrangement which did not result in much control. That was changed shortly to require Forest Service staff to issue permits after an inspection, although the logistics of doing so often precluded effective action. The Forest Service also worked with the railways to ensure fuel removal through burning of rights-of-way, use of good grades of coal to prevent sparks, and use of fire prevention apparatus on locomotives. Encouragement of grazing on the forest reserves and aggregation of campers into fire-resistant campgrounds were sustained as fire prevention measures as outlined before. The Canadian Forestry Association forestry and tree planting tours continued, actively supported by the Forest Service.

The first forestry radios were obtained in 1938, which proved to have many advantages over telephones. A start was also made on tower construction to meet the need for a greater detection capability, and the first use of bulldozers, tractors and plows was mentioned. Manpower shortages as a result of World War II made use of mechanical equipment particularly important.

A report of the Alberta Post-War Reconstruction Committee in 1946 signaled the postwar changes which were to so significantly affect the province. Recommendations included forest inventories, expansion of fire prevention services, reforestation, training programs for staff recruitment, and additional tree nurseries. Blefgen, the director of

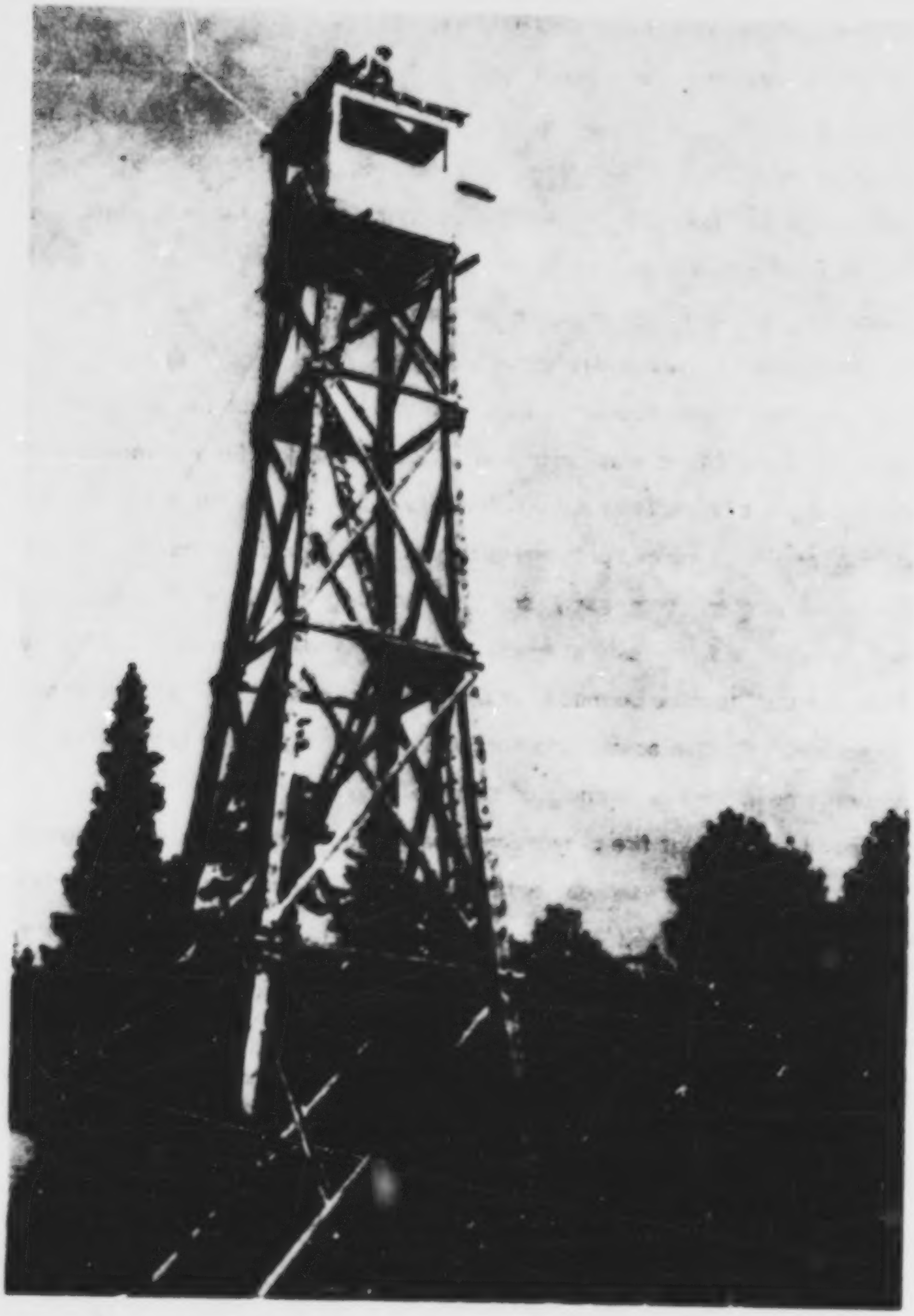


Figure 12. Early towers were built of hand-hewn timbers to keep construction costs to a minimum. (Alberta ENR)

forestry, summarized these early years in his comment that "..... during the depression years we were definitely informed that no money could be made available and during the war years the necessary labour could not be secured." In 1948 a federal-provincial agreement established the Eastern Rockies Forest Conservation Board to direct increased protection and management to the Rocky Mountains Forest Reserve. In that same year the order-in-council establishing the "Green Zone" made a distinction between forested lands and lands capable of supporting agriculture throughout the province, as a first step in rationalizing the patterns of settlement and to minimize the serious burning problem which still accompanied settlement.

b. Postwar Development - 1948 to 1958

This was a time of rapid development and change with extensive exploration and development in the petroleum industry, accelerated rates of land clearing for agriculture, and a rapidly growing provincial economy. Increased support was gradually provided to the Alberta Forest Service to help it to cope with both fire and forest management problems, but the pace of industrial and agricultural development outstripped the meagre Alberta Forest Service resources. Increased help was provided, but apparently never quite enough to enable the organization to cope with the demands which it encountered.

A provincial forest inventory was begun in 1949 which, by the mid-1950s, was able to show the extent of the forest resource and the effects of past fires on it. The year 1949 was a serious one for fires, with residents accounting for 42 percent of the area burned. The following year fire permits were issued only by Forest Service staff after inspection. At this time uniforms were first provided to Forest Service staff, the first formal ranger course was held jointly with park wardens at Banff, and a substantial group of foresters was hired from the University of British Columbia. All forest reserves except the Rocky Mountains Forest Reserve were abolished.

Some of the old restraints on forest fire fighting were gradually removed. In 1951 ministerial approval was required in order to hire more than one bulldozer on a fire, but that authority was passed on to the director of forestry the following year. In the fall of

1952 the policy of fighting fires only within 10 miles of roads and major rivers in the north was removed, setting the stage for a greatly expanded fire control effort. Helping to accelerate the rate of change was the Rocky Mountain Section, Canadian Institute of Forestry Fire Brief in 1953 which documented the inadequacies in levels of support for fire control as reflected in high rates of burn compared to other provinces. At that time the average annual rate of burn on the forest reserve was 0.05 percent, while in the northern forests the rate was 1.1 percent. A 1953 reorganization established a Forest Protection Branch with specific responsibility for fire control. The northern forest was divided into six forest divisions for more effective administration, and a buildup in fire fighting equipment was begun.

In 1955 a forest management agreement between North Western Pulp and Power Limited and the province led to construction of the first pulp mill in Alberta. The province accepted the fire control responsibility on the lease area. Serious fires in 1956, some of which burned on the lease, pointed to some still serious inadequacies in equipment and staffing levels and led to initiation of many new programs.

c. Growth and Technical Change - 1958 to 1980

This was a time of accelerated development in Alberta for agriculture, the forest industry, petroleum and natural gas, and coal. These great changes resulted in increased problems in forest management and fire control, and led to growth of the Forest Service to cope with them. Increases in numbers of fires and the increase in values-at-risk in the forest continually taxed the Forest Service resources, resulting in successive incremental increases in support after serious fire years. There was a general and sustained response to try to attain what were perceived as adequate levels of control, especially after about 30 years of impoverishment.

These years were characterized by major equipment and vehicle purchases, construction of caches and ranger stations, and increases in initial attack crews. The first Forest Service aircraft for use in fire was obtained in 1957. The first defensive action on fires outside Alberta was taken in 1958 with initial attack on fires in British Columbia and in Saskatchewan to stop them before potential spread into Alberta.

Increased construction and development activities led to a 1966 reorganization in the Forest Protection Branch establishing six administrative sections dealing with fire control, weather, forest fire research, communications, research and development, and construction.

Staff training and training of fire fighters were emphasized. A new training centre was constructed at Hinton in 1960 with programs developed to provide technician-level training to rangers, specialized training in various aspects of forest fire control coupled with a qualification and certification scheme, and training of fire fighters and staff outside the Forest Service for overhead positions. Training and education of young people was initiated through Junior Forest Wardens and a Junior Forest Ranger work program. A two-year technology program was developed through the Northern Alberta Institute of Technology to generate technicians who could be recruited into the Forest Service.

A forest protection area was defined in 1968 within which greater control on burning was planned by the Forest Service. A serious fire season that year highlighted the persistent problem of resident-caused fires and underscored weaknesses in weather forecasting, prevention and initial attack. A revised Prairie and Forest Fires Protection Act in 1971 addressed many of the weaknesses. In that year a fire control policy called for control of all fires within the first burning period as an objective. By 1976 the control objective stipulated that average annual area burned was not to exceed 1 / 10 of 1 percent of the forest land area.

The organization continued to grow, extending protection into the north through a combination of towers and aircraft patrols, ranger stations and manpower. The aircraft fleet was augmented by helicopters and contracted air tanker units. The consideration of economics came into play when certain northern areas were identified as limited-action zones where fires which escaped initial attack could be allowed to burn under observation. A system of priority zoning later facilitated allocation of resources during times of heavy fire load.

The fire control objective in 1980 maintained the average annual area burn rate not to exceed 1 / 10 of 1 percent. In order to achieve that, the general control objective remained the 10 o'clock rule, with specific objectives including discovery size of 1 / 4 acre or less, reporting time five minutes or less, control size three acres or less, get-away time for initial attack 15 minutes or less, and action on all fires within one hour or less. These objectives provided guidelines by which to measure operational effectiveness of the various components of the fire control system. Correction of perceived weaknesses continued to guide further build-up of fire control resources.

2. INTRODUCTION

Present-day fire control policy reflects contemporary thinking, but is strongly influenced by historic experience and events. A review of the history of fire control, interesting in its own right, helps to provide a better understanding of policy and a perspective against which to assess it. We have a far richer forest history than we commonly realize.

The purpose of this paper is to review the history of forest and prairie fires in Alberta to provide a background from which policy for its control and use may be derived. There were virtually no statements of policy made until recent years. Policy must generally be inferred from reported activities, legislation, observations and comments.

This historical review spans over 300 years from pre-European days before the advent of the Hudson's Bay Company to the present. Understandably, references for the earlier periods are few, but those that are available are revealing. Major sources of information were annual reports of the various government agencies, Hudson's Bay Company records, and historical references in general. Debates in Parliament have also been illuminating. Unfortunately, there was no Hansard in the Alberta legislature until recently, so annual reports and directives of the Alberta Forest Service were the major references from 1930. The law review journals have provided some useful insights into problems of legislation and enforcement.

An attempt has also been made to give some historic perspective, since political events and the pace of settlement affected policies. The historic perspectives are also needed as a basis for attempting to infer why policy developed as it did.

This review deals primarily with history and policy as related to fire. Both forest and prairie fires are included since they were both common events and often quite interrelated. The history of timber management is even more complex and deserving of separate treatment. Only the major events in timber management are described, and other developments only as they related to fire policies. Fire and timber policies are also interwined.

History in Alberta is tied to that of the prairies in general. Alberta is a part of the prairie geographic region, was a part of Rupert's Land, and later the North West Territories. Resources were subject to Dominion administration until 1930, and only in relatively recent times has Alberta policy developed in its own way.

The story is divided into periods marked by major political events. These include pre-European times, Rupert's Land from 1670-1870, and the North West Territories under Dominion government adminstration to 1905 when Alberta became a province. The provincial years spanned two major periods, the first to 1930 when the natural resources were controlled by the Dominion, and then the years of full provincial control to the present. Some of these periods have been further subdivided rather arbitrarily in this paper to reflect common events or trends. However, throughout the story there is a flow or continuum of events.

Climate and the nature of the land determined the vegetation, and hence the fuels available for combustion. Nature and man provided the sources of ignition, and weather conditions affected the subsequent spread and extinction of fires. It is interesting to note how the availability of fuels, variations in weather and changing causes of fire have combined to create the distinctive fire problems in Alberta which, in one way or another, have persisted to the present.

A number of supplementary documents of interest for additional background are included in the Appendix. Among these is a set of early fire ordinances dating from 1832 to 1907. There is also a summary of the managing agencies and senior officials from 1870 to the present.

3. PRE-EUROPEAN TIMES

Discussion of forest fire history and policy must begin in pre-European times since subsequent policies were developed largely by the perceptions of fire and the land held by early travellers from the East. They viewed fire primarily as a destroyer. The setting in those pre-European times was one of Indian use of the land. That use was characterized by relatively low-intensity human pressures on the land and a dispersed, nomadic cycle of seasonal activities.

Fire has been a common phenomenon since vegetation appeared following the most recent glacial period. Evidence for this appears as carbon deposits in lake sediment samples taken for paleobotanical studies such as those by Schweger *et al*. (1981). Lightning was probably the major agent of ignition, both in forested areas, and on the prairies as later documented by Rowe (1969). However, the arrival of man meant additional fires, both accidential and deliberate. Lutz (1959) commented that disagreement existed over whether native peoples, at least in the northern forests, exercised caution in the use of fire. Undoubtedly, many fires set by early man escaped control or were abandoned to later spread. The imperfect record of fire prevention demonstrated by modern man (Alberta 1980) suggests that the original inhabitants also probably experienced their share of mishaps with fire as well.

However, there is a growing body of evidence to indicate that Indians used deliberately-set fires both on the prairies and in the forests to encourage vegetative conditions favorable to their survival and welfare. Barrett (1980) described Indian use of fire on the plains and in the forests of Montana, based on interviews with informants and review of published journals. In a more recent paper Barrett and Arno (1982) wrote:

> "..... writings of explorers and pioneers mention deliberate burning by Indians frequently enough to warrant an investigation of its importance. Interviews with descendants of Native Americans and of pioneer settlers in western Montana suggest that Indian burning was widespread, had many purposes, but was generally unsystematic. Fire chronologies based upon scars on old-growth trees indicate that fire intervals within similar forest types were shortest near Indian-use zones. Comparisons of presettlement fire intervals with those calculated from modern lightning-fire records suggest that Indian-caused fires substantially augmented lightning fires over large areas."

Barrett and Arno (1982) listed a number of reasons cited by their informants for their purposeful use of fire:

"1. Maintenance of open stands to facilitate travel, and clearing travel routes through dense timber.

2. Improvement of hunting by stimulating growth of desirable grasses and shrubs, to facilitate stalking, and to drive or surround game;

3. Enhancement of production of certain foods and medicine plants;

4. Improvement of horse grazing.

5. Clearing of campsite areas - reduced fire hazard and camouflage for enemies, and cleaning up refuse (this was the most systematic use of fire indicated by informants); and

6. Communication, by setting large fires."

They concluded that the Indians in their region of the northern Rockies in the United States used fire informally to suit their immediate purposes rather than systematically as was reported by Lewis (1977) in Alberta.

The most comprehensive and definitive works on Indian use of fire in the northern forests of Alberta were prepared by Lewis (1977 and 1982). Through interviews with 37 informants he determined that fire use was prescribed for many reasons including the maintenance of meadows to provide feed for horses, and to encourage browse for moose and deer. Other reasons included improving ease of travel by elimination of deadfall and underbrush, reducing fire hazards around camps, esthetic reasons, burning of sloughs to improve habitats for furbearers and waterfowl and killing trees for a source of dry fuel wood. Lewis explained that his informants showed awareness of the differences between fires deliberately set at times and places of their choosing, in contrast to the uncontrolled and often undesirable effects of wildfires in mature conifers which supported important furbearers such as marten and fisher. They were also aware of the different responses of vegetation and wildlife to fires burning at different times of year. Accordingly, Lewis pointed out, controls were used in fire-lighting to establish and maintain preferred stages of ecological succession. The controls included seasonality (with early spring and late fall burning commonly preferred), time of day, fuel conditions, wind, general weather conditions, frequency of burning, size of areas, natural fuel breaks, slope, backfires, and use of people. These points and the reasons for burning were elaborated upon by Ferguson (1979) in her study in northwestern Alberta.

Figure 13. Cree Indians were affected by uncontrolled forest fires but used fire by prescription too. (Provincial Archives of Alberta)

On the northern plains, Arthur (1975) believed that it was clear that the Indians were very knowledgeable about the use of fire and its effect on both the grassland and bison. What impressed him most was the evident skill in using fire to control the movement of game. As he described it:

> "Perhaps the most significant use of fire by the Plains Indians was in controlling the movements of game, particularly bison. The most sophisticated use of fire was that utilized by all of the northern plains tribes in the initial phase of the bison drive, to literally herd the animals to a predetermined point from distances of up to forty miles. The skilled use of smoky fires and smoke creating firebrands so as to move the herd without stampeding it was extremely important and was interrelated with many other factors including weather, wind direction and velocity, topography, bison behaviour, and a vast practical knowledge of the environment on the part of the Indians. Although control of the bison herds was never absolute, the Indians were able to prevent animals from moving into regions (Palliser 1863), often enemy territory, or to induce the herds to move into other regions (Hind 1971)."

Arthur cited Hind (1971) who described why the Cree fired the prairie on the plains of southern Saskatchewan in late July of 1859.

> "One object in burning the prairie at this time was to turn the buffalo; they had crossed the Saskatchewan in great numbers near the Elbow, and were advancing towards us, and crossing the Qu'appelle not far from the Height of Land; by burning the prairie east of their course, they would be diverted to the south, and feed for a time on the Grand Coteau before they pursued their way to the Little Souris, in the country of the Sioux south of the 49th parallel."

Although the Indians have often been accused of carelessly firing the plains for trivial reasons, according to Arthur (1971) the fires they started not only helped maintain the plains in a short grass condition but fires deliberately set during one season brought benefits during a later one. Again, citing Hind (1971):

> "The ranges of the buffalo in the north-western prairies are still maintained with great exactness, and old hunters, if the plains have not been burnt, can generally tell the direction in which herds will be found at certain seasons of the year. If the plains have been extensively burnt in the autumn, the search for the main herds during the following spring must depend on the course the fires have taken."

The Indians burned the plains in autumn or early spring. Among others cited who commented on the reasons for the burning, Arthur (1971) referred to Colonel S.B. Steele (1915) of the North West Mounted Police who noted that in the early fall of 1874:

> "There were signs of prairie fires having run over the country the previous autumn .... Indians and the half breed hunters wilfully set the prairies on fire so that the bison would come to their part of the country to get the rich, green grass which would follow in the spring."

David Douglas, the botanist, also noted Indian burning in a parkland area about 30 miles northwest of Edmonton (Douglas 1914) although, as Byrne (1968) commented, Douglas offered no reason why the Indians burned. Byrne suggested it was probably the indirect result of prairie fires started to drive the buffalo.

In contrast, Thomas (1977) described some fires apparently set by Indians for political purposes. He described how Tomison and Langmoor in 1779 built the outpost of Hudson House (Rich and Johnson 1952). From the outset they suffered a food shortage and discovered that the Indians in that area were determined to drive the buffalo from that region. The Indian reasoning was evidently that if there were no buffalo, the white men would be unable to procure their own food, and the natives could acquire all the European goods they needed by selling meat at high prices generated by scarcity. The Cree and Assiniboine apparently set fire to the plains with such devastating success that by the fall of 1781 the Indians themselves came to Hudson House begging for food. Thomas (1977) also noted the conjecture in the Edmonton Post Journal for October 14, 1826, that the plains were on fire either accidentally by Joseph La Doceur tenting with their hunters or--- "by those roving scoundrels the Slave Indians who have a full power of doing such an injury perhaps out of revenge---" for an earlier reprimand by the chief factor for attempting to steal horses.

Pyne (1983) described much more extensive use of fire by native Indians throughout North America, although Rakestraw (1983) suggested that at times Pyne abandoned objectivity for the advocate's viewpoint, and Thirgood [3] expressed concern that some of these views may be putting a gloss on reality.

It is interesting to note that although prairie fires were ubiquitous, only two incidents of buffalo being trapped and burned have evidently been reported. Nelson (1973) cited Alexander Henry (the Younger) who observed a herd of burned and blind buffalo, and many dead near Pembina Post in the Red River Valley on Nov. 25, 1804 (Henry 1965). Robert Rundle (1977) described "burnt Buffaloes" on May 19, 1847, near the Red Deer river:

> "They had perished in the flames the preceding year when that part of the country was on fire. They must have rushed through the flames until overcome with the heat, they sank in the last gasp of agony. These poor animals, probably

---

[3] Thirgood, J.V. Faculty of Forestry, U.B.C., personal communication

> under Divine Protection, were the means of saving the lives of some Indians who were driven from the woods by starvation. The sufferings of these poor people were terrible, and caused me great anxiety."

These fires were also threatening to man. Thomas (1977) noted two instances where fatalities were recorded. In the Edmonton area in 1798 no fewer than eight Indians burned to death within a period of ten days, and during the disastrous fires of 1812 eleven Blackfoot Indians were killed near Paint Creek House on the Vermillion River.

In these pre-European times, then, lightning-caused fires played a virtually unimpeded role in shaping plant communities. That role was apparently supplemented in specific areas through applied fire set by Indians. Wildfires were not fought, and survival of tribal groups was effected through strategies such as fuel reduction burning (Lewis 1977), backfiring (Barrett 1980), or escape.

The present Indian distinction between areas in which fire was used was illustrated by Ferguson (1979) who quoted from one of her informants explaining the meaning of two words in the Slavey language:

> "go'leyde' - that means where you burn and all the little branches come out, where the moose eat."

> "'klo'degogedaleyde' - that is the prairie where you grow hay for the horses."

She also illustrated the general philosophy of applied use of fire in a quotation from another informant.

> "I didn't set the forest on fire just for the sake of burning but so that I can return to hunt the next year and live."

Dr. George M. Dawson was assistant director of the Geological Survey of Canada in 1880 when he surveyed in the Peace River country. Chambers (1910) cited from Dawson's testimony before a Senate committee studying the potential of the Mackenzie River basin. His comments on the occurrence of prairies in the Peace River area are particularly interesting in connection with the question of Indian use of fire. Chambers recorded:

> "Whatever theory be adopted, and may have been advanced to account for the wide prairies of the western portions of America further to the south, the origin of the prairies of the Peace River was sufficiently obvious, Dr. Dawson thought. There could be no doubt that they had been produced and were maintained by fires. The country was naturally a wooded one, and where fires were, of course, ultimately attributable to human agency, and it was probable

> that before the country was inhabited by the Indians it was everywhere densely forest-clad. That the date of the origin of the chief prairie tracts now found is remote, was clearly evidenced by their present appearance, and more particularly by the fact that they were everywhere scored and rutted with old buffalo tracks, while every suitable locality was pitted with saucer shaped 'buffalo wallows'. In its primitive state the surface was probably covered with a dense heavy growth of coniferous trees, principally the spruce (*Picea engelmanni* and *P. alba*), but with scrub pine (*Pinus contorta*) in some localities, and interspersed with aspen and cottonwood. These forests having been destroyed by fire, a second growth, chiefly of aspen, but with much birch in some places, and almost everywhere a certain proportion of coniferous trees - chiefly spruce - had taken its place. The aspen being a short-lived tree, while the spruce reached a great age and size, the natural course of events, if undisturbed, would lead to the re-establishment of the old spruce forests."

Parminter (1978) also cited Dawson (1886) who described a possible change in attitude among Indians in the Kootenay area on the southern boundary of what is now Alberta and British Columbia. The possible change may have been a result of increasing exposure to European travellers and their own attitudes:

> "It is often stated that the Indians are responsible for this (forest) destruction, and it is doubtless true that since they find the whole region in process of being ravaged by fires which they cannot prevent, they have become more careless than before. They would not, however, willingly destroy their own hunting grounds, and the best evidence of their care is found in the fact that, while along the North Kootanie Pass (which so far has been scarcely used, except by the Indians,) the woods are generally unburnt, those in the vicinity of the parallel Crows Nest Pass, which has now been for a few years a route used by whites, are entirely destroyed and represented only by bleaching or blackened trunks."

Indian use of fire was eventually discouraged in areas developed for settlement and timber production through a combination of persuasion, active fire suppression efforts and, eventually, the impracticality of using it. However, the practice continued into the 1930s in more remote areas (Lewis 1977, Ferguson 1979). Lewis (1982) cited an elderly Cree informant who commented in 1975:

> "Fires had to be controlled. You couldn't just start a fire anywhere, anytime. Fire can do a lot of harm or a lot of good. You have to know how to control it..... It has been a long time since my father and my uncles used to burn each spring. But we were told to stop. The Mounties arrested some people..... The country has changed from what it used to be -- brush and trees where there used to be lots of meadows and not so many animals as before"

4. RUPERT'S LAND

The establishment of the Hudson's Bay Company in 1670 set the stage for the European exploration and development of western Canada. The Hudson's Bay Company charter was granted by King Charles II on May 2, 1670, incorporating the Governor and Company of Adventurers of England Trading into Hudson's Bay. Prince Rupert, a cousin of the King, was the first-listed of the grantees. The company was awarded virtual sovereignty, as described by Oliver (1914):

> "The grant covered the right to the sole trade and commerce of all the seas, straits, bays, rivers, lakes, creeks and sounds, within Hudson's Strait; the lands, countries and territories upon their coasts which were not then actually possessed by the subjects of any Christian Prince or State; all sorts of fish, whales, sturgeons and all other royal fishes; and all mines, discovered and undiscovered, of gold, silver, gems and precious stones."

> "Provision was made for a Governor and Committee. Prince Rupert was nominated first Governor.....The territory was regarded as one of his Majesty's Plantations or Colonies in America and received the name Rupert's Land. Of this the Governor and Company for the time being were constituted the true and absolute Lords and Proprietors to have, hold, possess and enjoy forever upon condition of yielding and paying yearly to his Majesty two Elks and two Black Beavers whenever he happened to enter the country. The Governor and Company might assemble and make laws and ordinances for the good government of the company and its colonies and forts, and for the advancement of trade. They might impose penalities and punishments, provided these were reasonable and not repugnant to the laws of England.....The Company was given the right to appoint Governors and other officers, to try civil and criminal cases and to employ an armed force for the protection of its trade and territory."

Rupert's Land, the lands draining into Hudson's Bay, extended west to the continental divide on what is now the Alberta-British Columbia boundary, as illustrated in the map. The area in which the Hudson's Bay Company operated was subsequently expanded beyond Rupert's Land by a licence renewable every 21 years (Bryce 1968). Thus, the activities of the Hudson's Bay Company ranged substantially beyond Rupert's Land to the southwest, west and north.

John M'Lean (1849) advised that "The minutes of the Council are considered the statutes of the land....". A review of the minutes of the council of the Northern Department of Rupert's Land compiled by Oliver (1914) revealed very little reference to fire. It is evident that the company was established as a commercial venture and that that the decisions reached in council were largely business-oriented, dealing with such matters as staff postings and appointments, quantities of trade goods, required quantities of

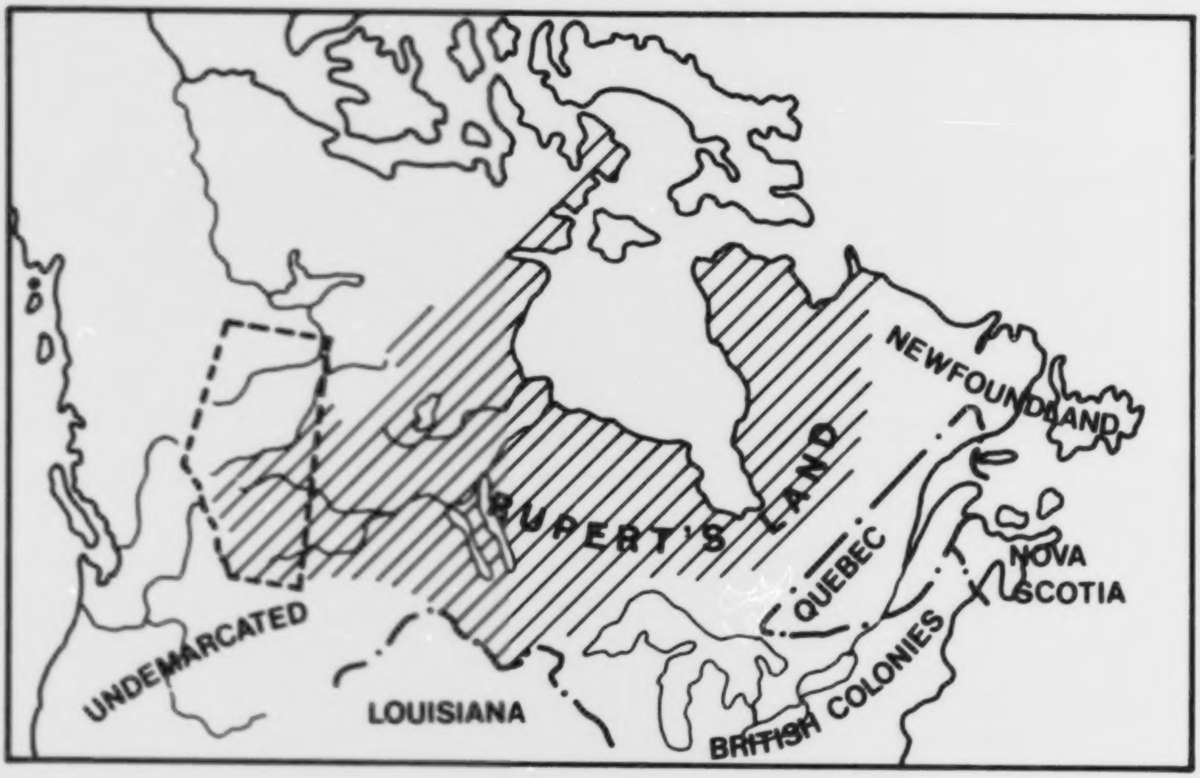

NEWFOUNDLAND
RUPERT'S LAND
QUEBEC
NOVA SCOTIA
UNDEMARCATED
LOUISIANA
BRITISH COLONIES

Figure 14. Rupert's Land and present-day boundaries. (MacGregor 1972).

pemmican and orders for establishment of new posts.

Two resolutions related to fire were noted in the minutes of council of 1843. These indicated that fires were recognized as a problem, but something to be accepted along with other hardships of the country, and a hazard be avoided if possible. The first resolution stated:

> "In consequence of the loss sustained last year by the destruction by fire at the usual place of deposit of the Island Lake Outfit Returns and to prevent a recurrence of this in the future it is Resolved
>
> "56. That the practice of leaving such Outfit Returns in deposit be discontinued and that they be conveyed to Oxford House, from whence to be forwarded either to York Factory or the Post."

The second resolution stated the following.

> "63. That the new Establishment to be formed on the straits de Fuca to be named Fort Victoria be erected on a scale sufficiently extensive to answer the purposes of the Depot; the square of the Fort to be not less than 150 yards, the buildings to be substantial and erected as far apart as the grounds may admit with a view to guarding against fire."

Local orders were made and action taken at various posts by fort officials as deemed appropriate. The HBC Post Journal for Carlton House on September 17, 1827, described a project to conduct water from a spring through a wooden pipe in a trench to the inside of the fort for convenience "---in case the Slave Indians may lay siege to the Fort, or also in case of fire" (Hudson's Bay Co. 1827). John Rowand at Edmonton House gave two orders related to fire in a memo to his staff on May 19, 1828 (Rowand 1828). One was to "---clean away from near the Fort all inflammatory materials---" in case of visits by strange Indians. Further, he stated, "Part of the Fort residents should be ordered to kindle no fires near the Establishment or should they, try to extinguish the same upon leaving it."

James Grahame at the Hudson's Bay Co. headquarters in Winnipeg (1874a) wrote a stern memorandum to Richard Hardisty at Edmonton House December 28, 1874, in which he advised:

> "As regards Jasper House, I have transmitted to London the very meagre statement you were able to furnish of the loss occasioned by the fire at Pembina River and trust that you will hereafter so order that no difficulty may

again occur in ascertaining the exact acts connected with any such disaster."

No further details about this tantalizing fire incident were available. In that same memo Grahame referred to a fire at Fort Frances, Ontario, in which considerable property was destroyed and the fort nearly obliterated. He enclosed a circular (Grahame 1874b) with instructions to post managers which he had written as a result. It advised that stocks of goods and furs be stored in places of safety, the use of matches or lights in those buildings to be strictly prohibited, and that papers and account books be kept in a location from which they could be removed at a moment's notice. Gunpowder was also to be stored separately so in case of fire the presence of the gunpowder would not deter removal of the goods.

Thomas (1977) concluded his review of fire and the fur trade in the Saskatchewan District by stating:

> "As far as can be determined, the Hudson's Bay Company did not have formal written regulations regarding fire control; precautionary practices at the posts were, for the most part, the responsibility of the officers in charge. These men realized that there was only a limited number of feasible defences against the ravages of fire. Hence, they concentrated upon protecting the post itself by clearing rubbish, keeping water on hand, and burning the grass around agricultural locations. Throughout the fur-trade era, these precautionary measures served to protect the trading post from destruction by fire. The Hudson's Bay Company officers fully realized that this phenomenon was but another force in a complex environment which they must respect if they were to survive."

Wildfires posed both direct and indirect threats to the Hudson's Bay Company. Fires frequently threatened to destroy the forts and outlying structures such as the rather typical incident at Fort Carlton in the fall of 1836. The HBC Post Journal written by J.P. Pruden, chief trader, noted for October 26, that a "Stone Indian" returned after dark to let him know that "the Plains were on fire not more than 7 or 8 miles from there and the wind blowing strong, and the Fire coming down rapidly from a South direction." He described how he got the gunpowder and other articles removed into the root cellar which was outside the Fort and quite safe from fire. They then loaded up a large quantity of water and covered their hay stacks with leather tents. The fire was by then "raging awfully" within a half mile. Fortunately, the wind dropped and "all hands were then sent to the top of the bank and they succeeded in knocking out the Fire with bunches of old leather fixed on poles of about 6 feet long."

The indirect threat was interference with natural food sources. James Bird travelled to Edmonton House in the fall of 1812 to prepare to build a new post. On October 12, he recorded:

> "---The Plains are, and have been these several Days past, burning in a most dreadful manner. Fires are raging in all Directions, and the Sun obscured with Smoke that covers the whole Country, and should the remarkable dry weather which has now continued so long, not change very soon, the plains must be burnt to such an Extent as to preclude all Hopes of our getting a large supply of dry provisions, for which appearances on our Arrival here were very flattering."

Thomas (1977) commented that those fires of 1812 were the most devastating to hit the Upper Saskatchewan since the arrival of the fur trade. He stated that Bird was subsequently compelled to send men 50 miles away to fish, a venture which was crucial to obtain food. Bird had learned from a Sarcee band that from Edmonton to the banks of the South Saskatchewan there was not a buffalo bull to be seen nor a bit of dry ground unburned. Events such as this not only made food supply to the fort critical, but meant that the fort could not provide the pemmican needed for the brigades. Further, in the absence of game, the Indians did not come by to trade either.

That there were virtually no references to fire control or use is not surprising for the country was vast, and the company evidently did not see itself in the resource management business, but rather as a commercial enterprise. John M'Lean (1849) writing about his 25 years of service in the Hudson's Bay territory observed that management even of the fur and game resources, which were of greatest concern to the company, were not taken seriously either. He attributed the chief reason for decline in profit at the time of his writing to the destruction of the fur-bearing animals. The following comments reflect the exploitive attitude which he observed at that time.

> "In certain parts of the country, it is the Company's policy to destroy them (fur-bearers) along the whole frontier; and our general instructions recommended that every effort be made to lay waste the country, so as to offer no inducement to petty traders to encroach on the Company's limits. Those instructions have indeed had the effect of ruining the country, but not of protecting the Company's domains."

> "Even in such parts of the country as the Company endeavour to preserve

> both the fur-bearing and larger animals have of late become so scarce, that some tribes are under the necessity of quitting of their usual hunting-grounds."
>
> "In 1842 the Governor and Committee issued positive orders that the beavers should be preserved, and every effort made to prevent the Indians from killing them for a period of three years. This was, in a great measure, 'shutting the stable door after the steed was stolen'."
>
> "It is thus evident that whatever steps their Honours may take to preserve the game, the attainment of that object, in the present exhausted state of the country, is no longer practicable."
>
> "....The minutes of the Council are considered the statutes of the land, and in them the provision districts are directed to furnish so many bags of pemmican, so many bales of dry meat, and so many cwt. of grease, every year; and no reference whatever is made to restrictions of any kind in killing the animals. The fact is, the provision must be forthcoming whatever be the consequence; our business cannot be carried out without them."
>
> "....To what cause then are we to ascribe the present scarcity? There can be but one answer - to the destruction of the animals which the prosecution of the fur-trade involves."

The period under review in this section is a long one, covering a time during which gradual exploration and development took place. It was not until 1754 when the first white man, Anthony Hendry (or Henday), arrived in what is now Alberta, and 1778 when Peter Pond built the first white-man's house in Alberta on the lower Athabasca River. David Thompson first saw Alberta in 1787. Alexander Mackenzie set out from Fort Chipewyan in 1789 to reach the Arctic Ocean, and left from the junction of the Peace and Smoky Rivers to reach the Pacific Ocean in 1793. The first Edmonton House was established in 1795 and the first Alberta road cut from Edmonton to Fort Assiniboine in 1824. The Palliser Expedition arrived in southern Alberta in 1857, and in 1862 the Overlanders had passed through Alberta on the way to the Cariboo goldfields (MacGregor 1972).

During this time, use of fire by Indians would have continued. Ferguson (1979) made the interesting suggestion that a shift in Indian burning policy may have developed in response to activities of the Hudson's Bay Company.

> "The Slave economy underwent a period of rapid economic change in the late 1800s.....In response to favorable trading conditions, native economic emphasis shifted from hunting to trapping within a general hunting and trapping context, and specifically to the trapping of the highly marketable 'big fur'. Asch (1976) points out that marten was the favoured 'big fur' of the MacKenzie Valley at this time and northwestern Alberta, also a good area for marten, probably experienced a similar trend. Unlike many of the other desirable animals in terms of game and fur, the marten is a denizen of climax boreal

> forest. A mainstay of its diet is the red squirrel, also an inhabitant of closed conifer forest. Bush burning, therefore, did not aid the predictability and productivity of the marten yield. In fact, if there were any chance that a fire could escape, bush burning would become a negative influence. Thus, in response to the increasing economic stress on marten, bush burning appears to have become more restricted, and in particular, fall bush-burning was phased out."

Comments by early travellers about fires and their effects are revealing not only to confirm their ubiquitous occurrence but to indicate the attitudes toward fires which prevailed. Among the first was Anthony Hendry (Hendry 1755) who made several references to "burnt woods" between Battleford and the Neutral Hills in Alberta. He observed that Blackfoot Indians had the technology then for starting fires, as he described:

> ".... their fire tackling a black stone used as a flint and a kind of ore as a steel, using tuss balls as tinder (i.e.) a kind of moss."

Samuel Hearne travelled west and north from Prince of Wales Fort in Hudson's Bay looking for the copper mines and a northwest passage. He noted in 1771 (Hearne 1971) a place where trees seemed to have been set on fire some years ago with "ten sticks lying on the ground, for one green one which is growing beside them." He also reported campfires left burning. While trying to catch up to a band of Indians they twice noted smoke toward which they headed - the second time reporting:

> "..... it was eleven o'clock at night before we reached it; when, to our great mortification, we found it to be the place where the women had slept the night before; having in the morning, at their departure, set fire to the moss which was then burning."

Alexander Mackenzie, exploring the Mackenzie and Peace rivers made similar observations (Mackenzie 1971). On the Mackenzie river in August 1789, looking for natives, he saw: "many places where fires had been lately made along the beach, as well as fire running in the woods." In ons case he noted that the fire had ".... spread all over the country, and had burned about three inches of the black light soil ...."

On the Peace River in October 1792, he recorded that an advance group of his own party:

> "..... slept here last night, and, from their carelessness, the fire was communicated to and burned down, the large house, and was proceeding fast to the smaller buildings when we arrived to extinguish it."

Both Samuel Hearne and Alexander Mackenzie commented on fire effects during their travels in the mid-1700s. Mackenzie's reference (Mackenzie 1971) was both an observation and a question. He described the banks of the Mackenzie River near Horn Mountain, stating that:

> "..... they are covered with large quantities of burned wood, lying on the ground, and young poplar trees, that have sprung up since the fire that destroyed the larger wood. It is a very curious and extraordinary circumstance, that land covered with spruce pine, and white birch, when laid waste by fire, should subsequently produce nothing but poplars, where none of that species of tree were previously to be found."

Hearne (1971) concluded his journal with a chapter describing the fauna and flora found in the Hudson's Bay area. His description of strawberries contained a perceptive reference to fire:

> "Strawberries, and those of a considerable size and excellent flavour, are found as far north as Churchill River; and what is most remarkable, they are frequently known to be more plentiful in such places as have formerly been set on fire. This is not peculiar to the Strawberry, but it is well known that in the interior parts of the country, as well as at Albany and Moose Forts, that after the ground, or more properly the under-wood and moss, have been set on fire, that Raspberry-bushes and Hips have shot up in great numbers on spots where nothing of the kind had ever been seen before. This is a phenomenon that is not easily accounted for; but it is more than probable that Nature wanted some assistance, and the moss being all burnt away, not only admits the Sun to act with more power, but the heat of the fire must, in some measure, loosen the texture of the soil, so as to admit the plants to shoot up, after having been deep-rooted for many years without being able to force their way to the surface."

Robert Rundle travelled as a Protestant missionary from England through York Factory to the Fort Victoria and Fort Edmonton areas in 1840 (Rundle 1977). His references to fire were unfailingly in terms of destruction. West of Fort Carlton on October 3 he noted the prairie on the north side of the river was "burnt and had a melancholy appearance". Throughout his journey, several times in Alberta, he referred to "dreadful fires". His impressions would certainly have been confirmed on August 23, 1846 when fire threatened Fort Carlton. After noting "Fire not far off" the previous day, he wrote on the 23rd:

> "..... Alarmed about fire; changed outside clothes to go. No service in e'vg. in consequence of fire. Slept in e'vg. At night went to the place above here.... What a spectacle! Returned by request or desire of Mr. Arthur to the Fort to tell McIvar about giving information in case th(sic) fire from another way should be alarming near th Fort..... Went again above when people were lay... down. Returned all hands to th Fort at last a watch ordered to be kept at th Fort. The Lord preserved th Fort, however,......"

The Earl of Southesk was probably the first "tourist" in the prairie West, travelling from Fort Garry to Fort Edmonton, through the Rocky Mountains from the McLeod River to the Bow River, and back to Fort Edmonton and home in 1859 and 1860 (Southesk 1969). He was extended help at the Hudson's Bay forts but did not have an easy trip. Many of his comments are worthy of note. On the trip from St. Paul, the end of the railway, to Fort Garry in May 1859 he learned how flammable the prairies could be - an experience common to many subsequent travellers and settlers.

> "Late in the day we crossed Little Red River, and in course of the afternoon traversed another considerable prairie, covered all over with the long, withered herbage of the byegone season. Taking no heed of this store of inflammable stuff, I carelessly threw away a match with which I had been lighting my meerschaum; in an instant the prairie was in a blaze. The wind speedily bore the flames away from us, and ere long the conflagration raged far and wide. I never heard to what extent it spread, but for hours afterwards we could see its lurid glow illuminating the darkness of the distant horizon."

In spite of the lesson, their breakfast fire the next morning also escaped ".... obliging us to make a rapid retreat into the part already consumed." His frequent comments made across the prairies to the mountains described evidence of previous fires in terms of devastation and destruction, and referred to ruins of burnt trees and scorched, charred and blackened stems. However, he expressed no remorse over the fires that had escaped from their own activities.

John McDougall, of the pioneering missionary family, accepted fire with greater equanimity, taking it as it came. In the fall of 1863 while netting fish at Saddle Lake, Alberta, he wrote (McDougall 1896):

> "A great prairie and forest fire suddenly came sweeping down upon us. We had very little time to roll the tent up on the poles, gather our bedding and nets, our guns, ammunition, etc., into the boat, and shove off, before the fire was upon us. We got out to one of our net sticks, and I held on to it while the smoke and flame and the intense heat lasted. Sometimes I was so nearly choking that I almost let go my hold. Had I lost my grip, this would have run us into another danger, a high wind having risen by this time. Our dogs must have taken to the water also, for when the smoke had cleared away they were on the spot waiting for us."

And even a direct loss which he sustained at Fort Victoria in 1864 was accepted as one of the hazards of prairie life (McDougall 1971).

> "One mishap had come upon us during my absence. A forest and prairie fire which came in from the south, 'like a wolf on the fold', had burnt our saw-pit and saws, together with considerable lumber. This was quite a set-back, as the manufacture of lumber by hand is slow work. Having more stock necessitated

our making more hay and providing more stable room. Then we went to work at replacing the timber and lumber which had been burnt."

In spite of a few references to beneficial fire effects, the general European point of view was that fire was a destructive force and undesirable.

An event of great significance took place in 1811 when, on June 12, the Hudson's Bay Company ceded to Thomas, Earl of Selkirk, a large territory along the Red and Assiniboine rivers. From the former river the colony was called the Red River Settlement, and the district named Assiniboia from the latter (Oliver 1914). Oliver described the significance as follows:

> "In the middle of the 19th century the great fur potentates still held sway over the vast territories of which a part now constitutes Western Canada. But the political future lay not with the traders, but with the colonists. It is not the Northern Department of Rupert's Land but the district of Assiniboia whose influence has shaped the political structure of the West. Selkirk rather than Simpson is the founder of Western Canada, just as the Council of Assiniboia and not the Hudson's Bay Company is the pioneer in the political and social legislation of the prairies."

The philosophy underlying the establishment of the Red River Settlement was described by Oliver, perhaps romantically. However, it stood in marked contrast to that of the Hudson's Bay Company.

> "But Selkirk, we may believe, was more interested in men than in beaver skins. His colonizing enterprises on the Atlantic seaboard and even the heart of the Great Lakes appealed to him more powerfully than The Honorable Company's dividends. He had the enthusiasm of those ancient Greek colonisers who set forth to found new states, confident in the virtue of fire plucked from the ancestral hearth. His passion to make fruitful the waste places of the earth, to lead the cramped fortunes of his fellow countrymen into the larger opportunities of those far flung reaches of land.... made him recognize in his fellow Scots the proper timber for his new enterprise."

Within this struggling settlement, the Council of Assiniboia was formed to govern, the first meeting of which appeared to be in 1815 (Oliver 1914). A reorganized Council of Assiniboia was formed following transfer of the Selkirk estate to the company. Although the date of its establishment is not clear, it was in existence by February 1835.

As Oliver pointed out, the importance of the work of the Governor and Council of Assiniboia consisted in the circumstance that they were pioneers. As pioneers they laid the foundations of prairie legislation and were the first to frame general measures for the public welfare of what is now western Canada.

During the first year of the colony's existence difficulties kept the population practically at a standstill, about 200. By 1822 the population had increased to 1,281 and by 1831 the population was 2,417 (Oliver 1914).

The observation of Lutz (1959) is appropriate to make at this point.

> "....White man enjoys the unenviable reputation of having been a major cause of forest fires in the North. No single class of man can be singled out as being primarily responsible for this reputation, nearly all walks of life are represented."

It is significant, therefore, that a meeting of the Council of Assiniboia during the Selkirk period in 1832 framed what appear to be the first regulations concerning wildfire in western Canada. The following extract is taken from the proceedings of the council held at Fort Garry on Friday, May 4, 1832 (Oliver 1914). At this council meeting were George Simpson who was the governor of Rupert's Land and council president, Donald McKenzie, governor of Assiniboia, and James Sovolan, James Pritchard, and Robert Logan, councillors. This first legislation is cited in its entirety here. Subsequent legislation is included in the Appendix.

> "The great injury done to the Woods of the Settlement by fire and the serious danger and loss occasioned annually by that devouring element, arising from the wilfulness of some ill-disposed persons, and the negligence of others, render it absolutely necessary, for the protection of lives and property, that salutary Regulation should be formed with a view to check this evil, and that severe pains and penalties should be inflicted on all persons who may violate such Regulation. It is, therefore,
>
> "Resolved 1st. That in all cases where it can be proved that the proprietor or occupant of Land lights a fire, between the 1st of March and the 1st of December, for any purpose whatsoever, at a distance exceeding fifty yards from his house even upon his own lands, he be fined in the sum of ten pounds, which will be levied forthwith by the sale of the partie's effects if necessary, one half of which fine shall be paid over to the informant and the other half retained in the hands of the Council, as a fund to meet such objects as they may hereafter be desirous of carrying into effect connected with the welfare and prosperity of the Settlement.
>
> "Resolved 2nd. That, in all cases where it can be proved that any person lights a fire between the 1st of March and the 1st of December, either in the woods or plains beyond the boundary of his own property or farm, within 10 miles of the banks of the river on either side whether it be productive of any injury or not, he be fined in the sum of ten pounds, to be levied as stated in the foregoing Resolution and to be disposed of in like manner, except in cases where such fires may have been lighted through absolute necessity, of which the Council alone (shall) be competent Judges and, if the party so transgressing be destitute of means to pay the fine, he be banished from the Settlement and subjected to hard labour, and the produce thereof be applied to the liquidation of the fine."

It is interesting to note for historic context that at the same meeting of council resolutions were also adopted to control the running of pigs at large, to control stallions being allowed to range at large and "the felonious practice of taking horses away from their grazing without the consent of the owners", requiring settlers to give three days of labor for improvement of roads and bridges, and setting dates for the annual public fair held on Frog Plain.

It is also interesting to note the nature of the succeeding amendments to these early regulations, made presumably in response to difficulties in effecting the hoped-for results, and in enforcement.

The first amendments were made in 1835 to prohibit lighting of fires for any purpose beyond "their enclosed ground under cultivation" unless the assistance of at least 10 neighbors was obtained to extinguish the fire.

The next amendment was passed in 1841, adding the first legislated requirement for fuel management and fire prevention. The owner of haystacks within a hundred yards of his buildings could not recover any compensation for destruction through fire, unless they had been surrounded by a plowed belt four feet wide and located at least 30 yards from the haystacks. The full text of the amendment is in the Appendix.

The new regulation also provided that anyone starting a fire between the end of May and beginning of November intended to consume growing or standing fuel should be fined 10 pounds. This regulation included an interesting provision. After the verdict but before the judgement the fine could be waived if the president of the Court certified in writing that:

> "The offender is morally guiltless, having committed the offence through a pressing necessity, which had not in the least degree arisen from his own act or neglect, and having done all in his power to prevent the fire from spreading towards the property of others."

Further amendments were passed in 1852 and in 1862. The latter appeared to be largely a rearrangement and consolidation of various local laws previously passed. In these, the haystack regulation remained, except that the plowed or burned firebreak was extended to one at least eight feet wide at a distance of at least 20 yards. For fires kindled which were intended to run, there was no provision for the declaration of "pressing necessity".

Paul Kane encountered at least one prairie fire during his travels in the west during this period. His account of one in Edmonton on September 26, 1845, is recorded in his diary, reproduced by Harper (1971). Kane wrote:

> "On the night of our arrival at Edmonton, the wind increased to a perfect hurricane, and we had reason to be thankful to Providence for our timely escape from the awful scene we now witnessed from our present place of safety, for, had we been one day later we might have been involved in its firey embrace. The scene on which our attention was now riveted, was the conflagration of the prairie through which we had passed but a few hours before. The scene was terrific in the extreme; the night being intensely dark gave increased effect to the brilliancy of the flames. We were apprehensive at one time of its crossing the river to the side on which the fort is situated, which must in that case have been destroyed. Our fears, too, for Mr. Rundell, whom we had left behind with the boys, were only relieved three days afterwards, when he arrived in safety. It appeared that he had noticed the fire at a long distance off, and immediately started for the nearest bend in the river, which with great exertions he reached in time, and succeeded in crossing. The mode resorted to by the Indians, when in the immediate vicinity of a prairie on fire, is to set fire to a long patch in front of them, which they follow up, and thus depriving the fire in the rear of fuel, escape all but the smoke, which, however, nearly suffocates them."

The consolidated regulations passed in 1862 appear to have held sway through the turbulent years which followed, culminating in acquisition of Rupert's Land by Canada in 1870. In Alberta, the level of exploration and settlement was still very low, and no general fire ordinances yet applied to that area.

In the meantime, in Ottawa the third provincial parliament of Canada passed "An Act for the Sale and Better Management of Timber upon the Public Lands" in 1849 (12 Victoriae, cap. 30.), and a further one entitled, "An Act respecting the Sale and Management of Timber on Public Lands" (22 Victoriae, cap 23). These acts dealt exclusively with the sale of timber, collection of dues, seizures and other administrative details. In neither act was any reference made to fire or forest protection.

The additional territory held outside Rupert's Land by the Hudson's Bay Company under a 21-year licence came up for renewal in 1859. In view of the tensions which had been developing between settlers in the northwest and the Hudson's Bay Company, the British Government agreed to a request by the Governor General of Canada that the question of the licence should be discussed, and also that the "general position and prospect" of the company should be considered by a committee of the House of Commons. The Canadian government was invited to present its views, as well as those of

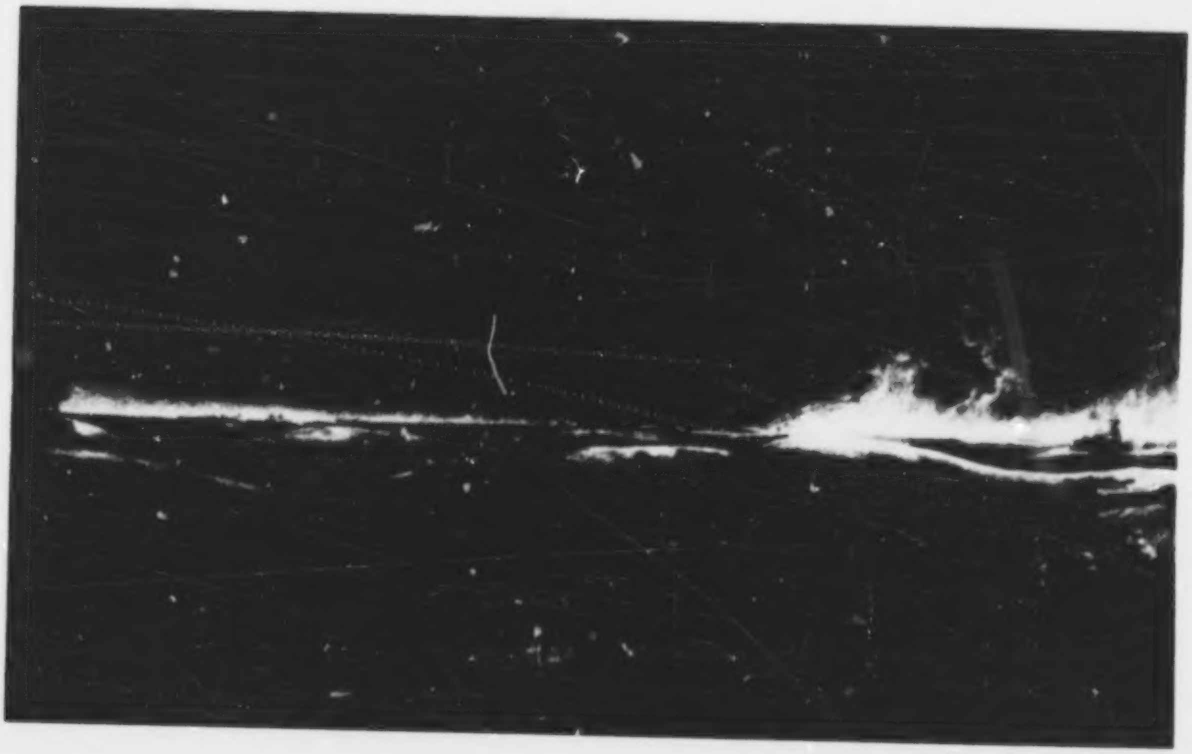


Figure 15. Prairie fire as depicted by Paul Kane, 1845. (Harper 1971)

the Canadian community, before the Committee (Bryce 1968). In *1857 Chief Justice* Draper went to Great Britain as Canadian representative with a very wide commission to advance Canadian interests. Three major points were advanced by the chief justice:

> "1. What he conceived to be the true western boundary of Canada, and in so doing his opinion based on the Quebec Act of 1774, that Canada should be allowed to extend to the Rocky Mountains and should have the privilege of exploring and building roads in that region."
>
> "2. The earnest desire of the Canadian people that Rupert's Land and the Indian territories should be maintained as British territory."
>
> "3. That Canada should be allowed to extend her settlements into these territories." (Bryce 1968)

The committee decided to recommend to the British Parliament that Canada should assume such territory as might be useful for settlement, and referred to the district of the Red River and the Saskatchewan as the ones most available, and that for the order and good government of the country arrangements should be made for their cession to Canada. The committee also agreed that those regions where settlement was impossible should be left to the exclusive control of the Hudson's Bay Company for the fur trade (Bryce 1969). Thus, the stage was set for subsequent transfer of these territories to Canadian administration.

In the meantime, increased agitation was being expressed by local settlers who were irritated by being ruled by the Hudson's Bay Company. Oliver (1914) quoted an extract of an editorial in the *Nor'wester* written in April 28, 1860 which stated in part:

> ".....we are bound to say that the feeling in this settlement is favorable to the Company regarded merely as a commercial body. The dissatisfaction implied in the petitions above mentioned applies to them in their capacity *as a Government*. They are professedly a 'money-making corporation' and so long as their operations are confined to amassing wealth, and they use lawful means in doing so, well and good; but it is too much to expect that they should be a genuine money-making company and an unbiased and impartial government at the same time. The two things are inconsistent."

Bryce (1968) cited the Governor of Rupert's Land, A. J. Dallas, as stating that people did not object to the *personnel* of the Hudson's Bay Company government, but to the "system of government". He feared the formation of a provisional government, and a movement for annexation to the United States which had been threatened.

The attitude of the Hudson's Bay Company was well illustrated by McInnis(1947) who described an incident in the early 1860s when the Hudson's Bay Company was invited by a group of developers to participate in a postal and telegraph connection from the east to the Fraser River. McInnis wrote:

> "The company was horrified at the prospect. 'What!' burst out its Governor, 'sequester our very tap-root! Take away the fertile lands where our buffaloes feed! Lead in all kinds of people to squat and settle and frighten away the fur-bearing animals they don't hunt and kill! Impossible. Destruction - extinction - of our time-honored industry. If these gentlemen are so patriotic, why don't they buy us out?'"

That suggestion that the company might sell opened up new vistas, both within governments and within the company.

Meanwhile, agitation for confederation of the Canadian provinces in the East led to the British North America Act of 1867. In recognition of the impossibility of continuing the company's privileges, the British government saw the need to reduce the company to the rank of a commercial corporation, and to transfer the territories to the new Dominion. In order to effect this the British government purchased the Hudson's Bay Company territories to enable their transfer. The British North America Act of 1867 provided for Her Majesty to admit Rupert's Land and the North Western Territory into the union on address from the Canadian Parliament. Further to this was passed the Rupert's Land Act, 1868, granting Her Majesty the power to accept the surrender of land from the Hudson's Bay Company but reserving its right to carry on trade. The order-in-council admitting the North Western Territory and Rupert's Land into the Dominion was passed on July 18, 1870, and gave the Parliament of Canada whole power and authority to legislate for their future welfare and good government (Oliver 1914). The Rupert's Land Act, 1868, provided for the continuance of "all the Powers and Authorities, and Jurisdiction of the several Courts of Justice now established in Rupert's Land..." until such time as otherwise enacted by the new Parliament of Canada. Thus, the early legislation and precedents of the Council of Assiniboia were continued, and affected subsequent ordinances.

The political dissatisfaction, to which reference was made earlier, continued. The phasing out of interest in government within the Hudson's Bay Company and the vacuum in authority created during the transitional years of 1867-1870 created a climate in which the dissatisfaction grew. This, in part, led to the Red River Rebellion involving Louis Riel.

Those events focused interest on the West, and provided an impetus to the Canadian government to consolidate and develop its new holdings.

5. DOMINION ADMINISTRATION OF THE NORTH WEST TERRITORIES 1870-1905

5.1 Before the Railways 1870-1885

As first prime minister of the new Dominion of Canada, John A. Macdonald's primary objective was to extend dominion over all of British North America. (Anon 1969). During his first premiership from 1867-1874 this was achieved: Manitoba, British Columbia, Prince Edward Island and the North West Territories all became part of Canada. Only Newfoundland refused to join.

Macdonald recognized that political expansion would be viable only if the north-south economic flow could be replaced by an economy built on east-west commercial trade. Accordingly, he sought to encourage western settlement, establish Canadian industries, and create extended transport and communications systems under Canadian control (Anon 1969). This period was characterized by an emphasis on surveying, developing the West and construction of the transcontinental railroad to provide the needed communications links.

There was some feeling of urgency to effect these developments. The colonies of Vancouver Island and British Columbia had been united into a single province in 1866. Economic problems were compelling serious consideration by that new province of either the alternative of annexation to the United States or confederation with Canada (McInnis 1947). Construction of the railroad was one of the conditions of British Columbia's subsequent union with Canada in 1871. As payment for a share of the cost of railroad construction the Railway Belt, a strip of land 40 miles wide along the right-of-way, and the Peace River Block, a block of land in the Peace River country, were turned over to the federal government by the province of British Columbia.

The subsequent cost to the Government of Canada of the Canadian Pacific Railway, completed in 1885, was a grant of $163.5 million both direct and indirect, loans of just under $35 million, and a grant of more than 26 million acres of the best prairie lands.

When Manitoba was made a province in 1870, all ungranted lands within its borders were retained by the federal government to be administered "for the purposes of the Dominion" (McInnis 1947). The basic policy adopted toward the West appears distilled in that phase. The resources of the West were to be utilized by the government of

Canada, not for local purposes, but for the benefit of the nation as a whole. The cost of the expansion and development of the West was to be repaid from western lands (McInnis 1947). The grants to the Canadian Pacific Railroad along with the land settlement to the Hudson's Bay Company (which received one-twentieth of the fertile belt), land grants for construction of railroad branch lines and for schools accounted for almost three-quarters of the fertile belt. Expansionism and encouragement of immigration underlaid events leading to eventual provincial status for Alberta and Saskatchewan in 1905.

Stephenson (1977) referred to the report of a Professor Hind who was sent out by the government of Canada to assess the prairies. Hind indicated that it was a fertile, grassy plain, but what caught John A. Macdonald's fancy was his notation that there were "almost no trees". As Stephenson put it: "to farmers from the East, weary of clearing heavy forests before they could start cultivating the land, the prairies would look like heaven." The observation of the "treeless" nature of the land also had a bearing on future forestry program developments, which emphasized tree planting.

Events with respect to forestry and fires are best described in the annual reports of the managing departments in Ottawa. The North West Territories were administered by the Dominion Lands Branch through the Secretary of State from March 1, 1871 until the Department of the Interior was formed July 1, 1873. Additional insights are obtained through the minutes of the council of the North West Territories which was re-established in 1877. Events are described chronologically as reflected in the annual reports.

In the annual report of the Secretary of State for the year 1868 (Canada 1869) the minister made a revealing observation. On the eve of the assumption of the great responsibility for the North West Territories his major point was that through reorganization he had been able to dispense with the services of three clerks in the department. Frugality was undoubtedly a major concern of the fledgling Canadian government, an attitude which greatly affected provision of services.

The first reference to the North West Territories was made in the report of the Secretary of State for the year ending June 1871 (Canada 1872). He reported:

> "Since my last Report the North West Territories have been transferred to and become part of the Dominion of Canada, and by Sec. 34, Chap. 42 of 31 Victoria, are under the management of this Department."

In comments which reflected the apparently pervading lack of knowledge of the area, the minister referred to the very large area suitable for the growth of agricultural crops, to the presence of valuable minerals, especially gold, silver and coal, and to the "northern portion of this Territory, where it ceases to be valuable for agricultural purposes, as valuable as being the great fur-producing region of this continent". No mention was made of the forest resources or to other resources such as oil, gas and hydropower which have since assumed prominence.

The minister commented on the need for railroad connections which were to be furnished by the Canadian Pacific Railway once constructed, and to improvement of roads. In response to the need to encourage settlement, the Dominion Lands Branch, with responsibility for surveying and management, was added to the department. A large number of surveyors were immediately put into the field.

The head of the new Dominion Lands Branch was John Stoughton Dennis who was given the title of surveyor-general. He was largely responsible for adoption of the land survey system based on townships of six miles square. The extensive field survey work required the appointment of an inspector, Lindsay Russell. The annual report (Canada 1872) contained an extract from Russell's report on the first year's activities which illustrated the inherent problem of fire in that part of the country.

> "The surveys were most seriously retarded by the unusually prevalent and extensive fires that last summer raged throughout our own and the U.S. North Western Prairies."
>
> "Even before they reached any particular section their heavy smoke darkened all the country alike and effectually prevented the surveyors from taking anything but exceedingly short and unprofitable sights. Sometimes obliging them through the impossibility of seeing a Picket at all to cease work until a favorable wind would spring up to dissipate the densely hanging fog of smoke and ashes. Their necessary astronomical observations were frequently similarly delayed."
>
> "These were the least of the troubles arising from the fires; when, as they eventually did, they swept over the tracts being surveyed a certain damage to all, extreme danger to some and actual disaster to others were the results. Two of the parties that of Mr. Wagner, and Mr. F. H. Lynch Staunton, were completely burnt out, losing all their provisions, tents, equipage, clothing, some of their instruments and barely escaping with their lives. Mr. Milner Hart, though successful in saving his effects under the like circumstances, had with his party even a narrower escape from suffocation and burning."

> "Besides the arresting of the work thus caused, time was necessarily lost in these cases, in returning to Fort Garry, to re-fit for its resumption."

> "The disadvantage under which all lay, nearly alike after the fires passed, was the difficulty the various parties had in keeping their horses used for transport. Very few patches of grass remained, they were often obliged to carry hay feed long distances."

Despite the difficulties, 3,813 miles of survey lines were run, comprising an area of over 1.5 million acres. The surveyors were aware of the importance of wood, and Russell observed the following.

> "With respect to wood for fuel, fencing, building and &c., the returns of survey so far show but a moderate portion of forest, but it is to be borne in mind that the sub-division surveys especially have as yet been nearly altogether confined to the prairie portions of the Province."

Berry (1953), writing about the Whoop-up trail in Alberta observed that from the later 1870s until the end of the century, prairie fires took a "severe toll" every year, burning over large areas, sometimes for several weeks at a time, without any control being exercised. He cited W. H. Cox, a member of the North West Mounted Police, who reported that on a trip from Fort Walsh to Fort MacLeod in August 1881, he saw one strip 80 miles long that had been burned in a prairie fire. However, Arthur (1975) cited Henry Youle Hind (Hind 1860) who described a far larger one which occurred in the late 1850s:

> "From beyond the South Branch of the Saskatchewan to Red River all the prairies were burned last autumn, a vast conflagration extended for one thousand miles in length and several hundreds in breadth. The dry season had so withered the grass that the whole country of the Saskatchewan was in flames .... we traced the fire from the 49th parallel to the 53rd and from the 98th to the 108th degree of longitude. It extended no doubt to the Rockie Mountains."

Forest fires and forest destruction were a concern to Prime Minister John A. Macdonald, as evidenced in a letter to John Sandfield Macdonald (Macdonald 1871):

> "Ottawa, June 22nd, 1871
>
> My Dear Sandfield,
>
> The sight of the immense masses of timber passing my windows every morning constantly suggests to my mind the absolute necessity there is for looking into the future of this great trade. We are recklessly destroying the timber of Canada, and there is scarely a possibility of replacing it. The quantity of timber reaching Quebec is annually decreasing, and the fires in the woods are periodically destroying millions of money. What is to become of the Ottawa region generally, after the timber is cut away, one cannot foresee. It occurs to me that the subject should be looked in the face and some efforts

> made for the preservation of our timber. The Dominion Government, having no lands, has no direct interest in the subject, but it seems to me that it would be a very good thing for the two Governments of Ontario and Quebec to issue a Joint Commission to examine the whole subject and report:--
>
> "1st. As to the best means of cutting the timber after some regulated plan, as in Norway and on the Baltic;
>
> "2nd. As to replanting so as to keep up the supply as in Germany and Norway, and
>
> "3rd. As to the best means of protecting the woods from fires.
>
> "The Commission would be a popular one if the men were well chosen, and their report, if drawn with care, would be of incalculable value. I think you might make a good strike by taking this subject up vigorously."
>
> Yours always,
> John A. Macdonald"

As Johnstone (1973) observed, there is no record that such a commission was ever established. The provincial governments at that point were evidently more concerned with collecting revenues from the timber than with conservation, and the popular view was that the forest would last forever.

In 1872, the Secretary of State (Canada 1873) reported on a procedure intended to enhance wood supply in the North West Territories.

> "To ensure that in any township, the greatest possible numbers of its settlers should benefit alike by such wood as might occur therein, and to prevent its monopoly by the few first comers, who might take up all the best wooded lands, it was provided, in the Dominion Lands Act, that in townships consisting of partly prairie and partly wood-land, the timbered portions should be divided into wood lots, varying from ten to twenty acres in extent, so as to afford as nearly as circumstances would admit, one such wood lot to each farm of 160 acres"

In that same year J. S. Dennis reported that measures had been adopted to "prevent the wanton destruction of timber and wood in the Province, and at the same time to provide legitimate means by which settlers on prairie lands could obtain a supply for their own use, within certain limits, free of tax". He pointed out that these regulations which were adopted under an order-in-council were not intended to create revenue but to control the cutting of timber and fuel. No reference was made to fire, and the "wanton destruction" likely referred to indiscriminant cutting. However, the value of the forests for

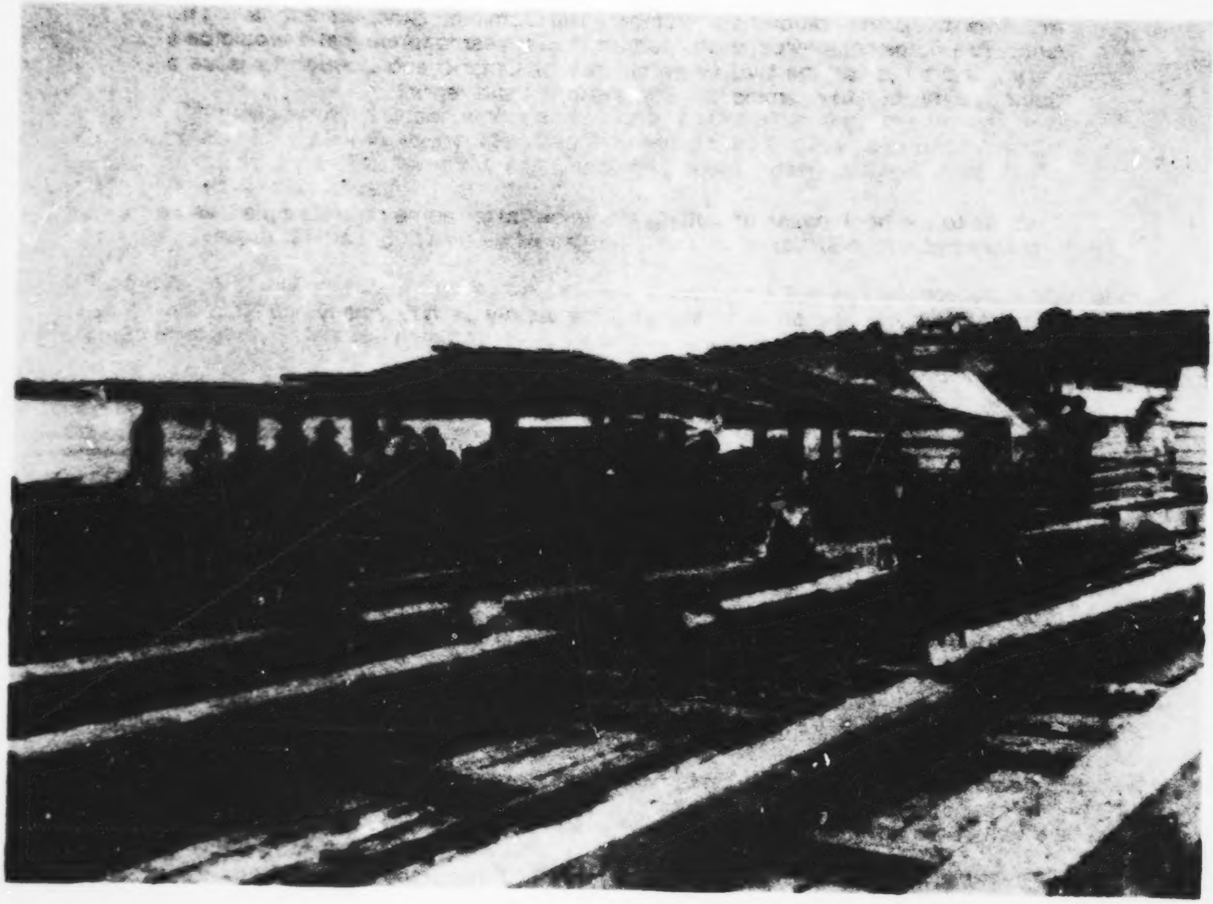


Figure 16. The sight of the great flow of pine timber past the Parliament Buildings in Ottawa concerned Sir John A. Macdonald. (Public Archives Canada C 19892)

wood supply was clearly identified by the surveyors.

On April 14, 1872. Parliament passed "An Act respecting the Public Lands of the Dominion", referred to as the "Dominion Lands Act". This act applied exclusively to the lands included in Manitoba and the North West Territories which were referred to as "Dominion Lands". A number of definitions was listed including "Crown Timber Agent" defined as "the local officer appointed to collect dues and to perform such other duties as may be assigned to such officer, in respect to the timber on Dominion Lands". It is interesting to note that collection of dues is mentioned specifically, but that fire control is not mentioned at all. The act also described the system of wood lot surveys to which Dennis referred. Extracts from this act are included in the Appendix. Reservation of timber lands was made possible through Sec. 47:

> "Any tract of land covered by forest timber may be set apart as timber lands, and reserved from sale and settlement."

This interesting precedent had far-reaching effects later, enabling the first reservations which became known as forest reserves. Fire control was not mentioned except as a clause outlining the conditions and responsibilities of timber lessees. Sec. 51(3) stated that the operator was:

> "to prevent all unnecessary destruction of growing timber on the part of his men, and to exercise strict and constant supervision to prevent the origin or spread of fires."

When the Department of the Interior was established in 1873, with David Laird as the first minister, its responsibilities included affairs of the North West Territories, the lands and affairs of the Indians of Canada, the Dominion lands and the Geological Survey of Canada (Canada 1875). The Dominion lands later included the Railway Belt and Peace River Block in British Columbia. Special surveys were inaugurated by the surveyor-general, the objectives of which included obtaining a knowledge of the character of the resources in the way of soil, timber, and minerals, and also of the flora and fauna of the territories covered by the survey. Although the early surveys were very general, inventories were inaugurated.

By 1873 the first Dominion land survey activity had reached Alberta (MacGregor 1972). The North West Mounted Police Force was formed in 1873, and the first post in Alberta constructed at Fort Macleod in 1874. In that same year a detachment arrived at

Edmonton.

The first reference to tree planting on the prairies was made by David Laird, minister of the Interior, who described the journey he made from Fort Garry to Qu'Appelle in the summer of 1874 (Canada 1876). He wrote:

> ".....nothing impressed itself upon my mind more than the treelessness of a vast portion of the country over which I passed. Day by day, as I crossed the wide extent of prairies utterly destitute of trees, the question presented itself; How is the settlement of these prairies possible, if the settler is without wood for fencing, building, or fuel?"

He referred to tree-planting activities in the plains area of the United States, and J. S. Dennis, the surveyor-general, wrote an extensive report on forest tree culture as practiced by the U.S. government and State of Minnesota.

Whether or not the treelessness of the prairies was a result of persistent fires was a subject of considerable discussion at that time. Warkentin (1973) cited Henry Youle Hind who, based on his observations along the South Saskatchewan river valley, thought that the southern lands were reclaimable if the annual fires which devastated the grasses were to cease for a few years (Hind 1859).

The North West Territories Act passed by the Parliament of Canada in 1875 amended and consolidated the laws respecting the North West Territories and provided for the formation of a new Governing Council of the North West Territories, the first lieutenant-governor of which was David Laird, former minister of the Interior. The first council met in March 1877, and one of the first bills passed was "An Ordinance respecting the Prevention of Prairie and Forest Fires." Other ordinances passed in that first session dealt with protection of the buffalo, gambling, infectious diseases, and relationships of masters and servants (N.W.T. 1877a). It was evident that fires were a concern in that wood-short region. This 1877 forest and prairie fire ordinance applied to the entire North West Territories, in contrast to those of the Council of Assiniboia. However, it is evident that the precedents established by that council strongly affected the legislation of the new N.W.T. council. The ordinance provided penalties for persons starting fires without first taking effective means to prevent their spread. The entire text of the ordinance is included in the Appendix.

The minutes of the N.W.T. Council meetings indicated that the council generally resolved itself into a Committee of the Whole to discuss the bills and usually, "after some time spent therein" either reached agreement or "made amendments thereunto". Unfortunately, no record was made of the nature of the discussions which would have helped to identify the particular concerns or disagreements.

John A. Macdonald assumed responsibility for the Department of the Interior in 1878, and transferred responsibility for the North West Mounted Police Branch to that department as well (Canada 1879).

As reported for the year ending June 1879 (Canada 1880), the House of Commons passed a resolution that 100 million acres of land with mineral rights be appropriated for the purposes of the "Pacific Railway", and that lands within 110 miles on each side of the line be reserved from operation of the Dominion Lands Act of the time. This resolution also resulted in the establishment of the Railway Belt in British Columbia established under the Dominion Lands Act.

The report included the first reference to a Crown timber agent in Winnipeg who listed 33 sawmills in Manitoba, Keewatin and the North West Territories. Reference was made to good prices paid for timber berths sold near Lake Winnipegosis, and the agent raised expectations of large revenues from the forest resource - an unrealistic expectation, as it turned out. Reference was also made to the beginning of stock-raising along the "easterly base and slopes of the Rocky Mountains", a development to have later implications for fire management in Alberta for protection of range lands from fire.

Settlement at this time was increasing, although thus far mostly in Manitoba and Saskatchewan. The buffalo were fast disappearing. This was exacerbated by the influx of a large number of U.S. Indians taking refuge in Canada from U.S. troops after the Battle of the Little Big Horn. During the previous three years, Indian Treaties Six and Seven covering southern Alberta had been signed (MacGregor 1972).

The annual report of the North West Mounted Police Force, Wood Mountain detachment (Canada 1880), included references to two prairie fires, the first of many reports in the years ahead. The first reference was on April 9, 1879:

> "During a high wind a large prairie fire approached the post, and struck a portion of the Sioux camp, destroying eight lodges and killing one man and one child.
>
> "S. C. Sheppard saved the lives of three children by courageously rushing into a burning lodge, which was surrounded by fire, and extricating them. The Indians,

> when the fire struck their camp, ran away and left their women and children to save themselves."

The second fire occurred on October 3 during which 25 tons of hay were lost in one location, but haystacks in the main hay field were saved after "strenuous exertions".

The superintendent at Fort Macleod reported on what he believed were Indian-caused fires that same year, the first record of profound difference in view between Indian and European perception of the role of fire:

> "Prairie fires devastated the country during the fall of the year, destroying the grass for many miles in every direction, thereby causing great inconvenience in travelling. These fires are generally believed to have been the work of Indians when leaving for the southern country to hunt."

The availability and value of wood on the prairies varied greatly with perceptions of its relative abundance. These varying views undoubtedly had a bearing on relative concern for fire control. The minister commented in 1881 (Canada 1882).

> "The supply of fuel for use of settlers in the North West Territories is a question having a very important bearing upon the development of that country. The surveys and explorations conducted by the Dominion Lands Branch of the Department during the past few years have, to a great extent, dispelled the erroneous impression so long prevalent, that there is a serious scarcity of fuel material in or convenient to the prairie regions, and has established the fact that ...... the timber is sufficient for the needs of settlers for years to come."

He pointed out the exception on what was known as the Missouri Plateau which was largely treeless prairie, but commented on the abundance of lignite coal in that region which could be used as fuel instead.

The following year (Canada 1883a) the minister, Sir John A. Macdonald, revealed the relative priorities of agriculture and forestry when he explained:

> "The energies of the Department, and the monies placed at its disposal by Parliament, have been so exclusively devoted to the examination and survey of agricultural lands, that explorations for timber have so far been largely left to private enterprise. Notwithstanding this, the revenues of the Crown from timber lands in the North West continue, through economical management, to increase, while care is taken that the areas placed under license should bear only a reasonable proportion to the needs of the population."

He also mentioned progress of the railway and influx of settlers - homestead entries that year totaling 16,740 on almost 2.7 million acres of land.

The North West Territories of the prairie West were divided into four provincial districts for administrative purposes; Assiniboia, Saskatchewan, Alberta, and Athabasca.

Present-day Alberta includes the former districts of Alberta and Athabasca, along with some additional lands as illustrated in the map. By this time a Crown timber agent, Thomas Anderson, had been stationed in Edmonton.

Anderson was responsible to the Timber, Mines, and Grazing Branch in Ottawa, established in 1880. Reference was made to four sawmills operating in Alberta - those of the Hudson's Bay Company and Messrs. Hardisty and Fraser, both in Edmonton, Athabasca district, one at the St. Albert mission in St. Albert, and Mr. P. McLaren's at Pincher Creek in the Alberta district. Two new commercial sawmills also started that year - those of Messrs. Lethbridge and Co. at Beaver Creek, Porcupine Hills, and the Cochrane Ranche Company at Calgary, both in the Alberta district. The development of the timber industry was reflected in the appointment the following year of a Crown timber agent in Calgary. The first Forest rangers were appointed in Alberta in 1883. John Connor, served in the Edmonton Crown Timber office under Thomas Anderson (Canada 1884a); and Forest ranger D.G. McPhail was appointed to work under the supervision of C. L. Gouin, in charge of the Calgary Crown Timber office (Huth 1980).

Minor changes were made to the Prairie and Forest Fire Ordinance by the North West Territories Council in 1879, but the provisions remained essentially the same as previously (N.W.T. 1879). Rewording of some clauses was probably intended to clarify the meaning and enhance enforcement. The length of stipulated prison sentences was reduced.

It is noteworthy that in the year following the first ordinance six prosecutions were made, five in Calgary and one in Edmonton. Fines ranged from $2.50 to $ 10 (N.W.T. 1878).

Disappearance of the hardwood forests and then of the pine forests of eastern Canada had been viewed with alarm both by conservationists and individuals in the forest products industry (Johnstone 1973). When the American Forestry Association was formed in 1875 several influential Canadians were enlisted in its membership. Among these were the Hon. H. G. Joly de Lotbiniere and James Little of Montreal. Little's son, William, became a vice-president of the AFA, and the Canadian members were able to arrange that the American Forestry Congress of 1882 took place in Montreal.

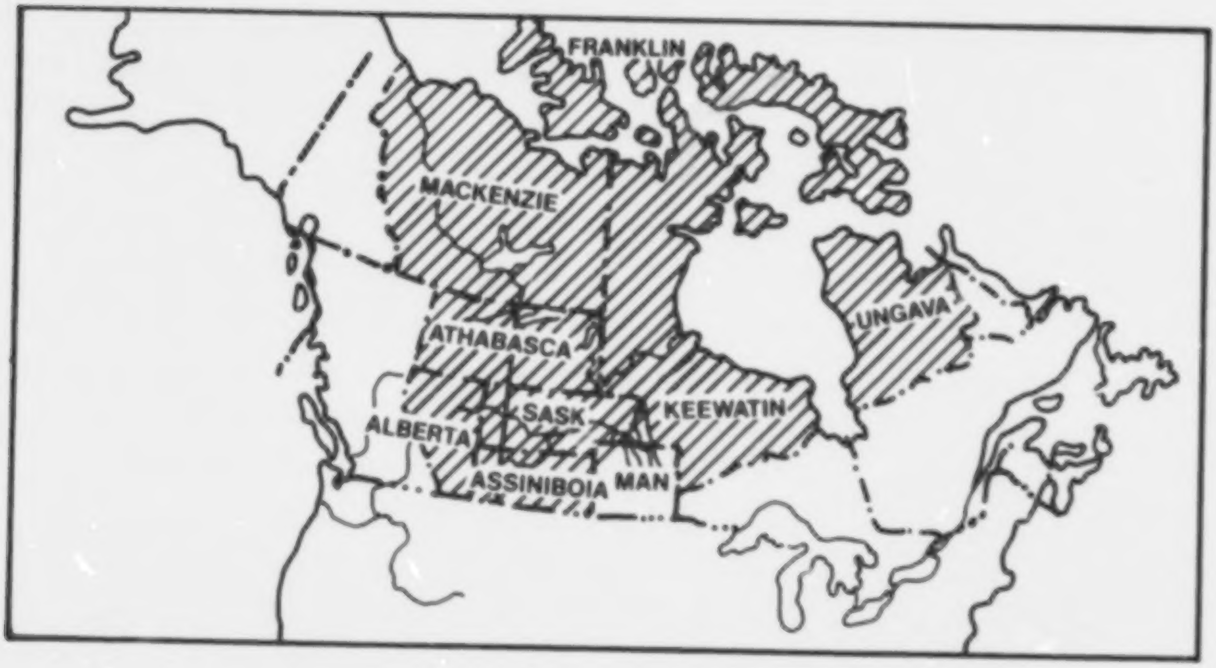

FRANKLIN
MACKENZIE
ATHABASCA
UNGAVA
SASK
KEEWATIN
ALBERTA
ASSINIBOIA
MAN

Figure 17. N.W.T. administrative districts and present-day Alberta boundary. (MacGregor 1972)

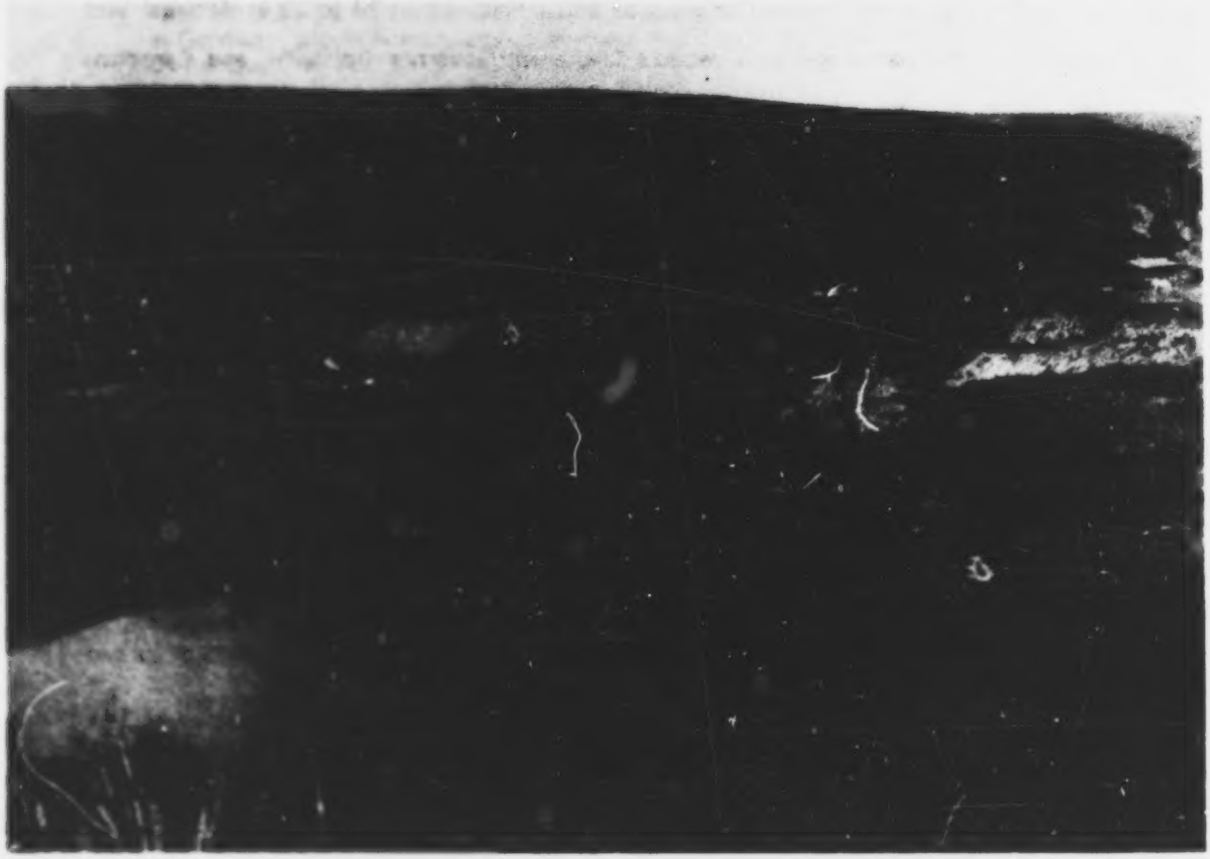


Figure 18. The sawmill on Mill Creek, branch of the Oldman River was one of Alberta's earliest forest industries. (Public Archives Canada PA 50772)

The American Forestry Congress of 1882, held August 21 to 23 in Montreal, was held under the patronage of Quebec's Lieutenant-Governor Robitaille, and Canadians participated actively in the proceedings, attended by more than 200 delegates from the United States and Canada (Johnstone 1973). Conservation of the forest resources was a major theme, and one of the speakers proposed that commissioners of woods and forests be appointed in the American states and in Canada. Johnstone (1973) reported that soon after, in February 1884, J.H. Morgan, who was one of the congress organizers, was appointed as a one-man commission in Canada.

The arrival of the railway in the West brought with it another major fire problem which was to persist for many decades. The N.W.T. Council minutes of 1883 (N.W.T. 1883) include a letter by a Major General Strange:

> ".....relating to the danger of Prairie fires resulting from Locomotives using the Canadian Pacific Railway line, and suggesting the passing of some Law to oblige railways whose lines cross the country to provide screens for their engines in order to prevent sparks escaping therefrom."

> "Beg leave to report, That they do not consider the Council possess the power of legislating in the direction indicated. The Committee from other sources of information, however, are led to believe that a more prolific source of danger to the country results from the careless manner in which engine drivers and other railway employees discharge the ashes and cinders upon the road bed, which, being hot at the time of discharge and often holding fire, in high winds are more likely to set fire to the Prairie than sparks from Locomotives using coal."

The committee, "having in mind the desirability of preventing fires from the cause indicated above", prepared an amendment to the Prairie and Fire Ordinance No. 4 of 1879. It was apparently not acted upon, for the next revised ordinance was not passed until 1888.

The problem of a shortage of trees on the prairies was addressed by a Mr. Charlton in the House of Commons in April 1883 (Canada 1883b). He suggested that some provisions be made for homesteading based on tree culture. His proposal was that some of the homesteading requirements could be met through the planting and tending of trees, including recognition of the need to protect them from fires. Reference was made to the Tree Culture Homestead Act in the United States. Sir John A. Macdonald replied that he agreed with respect to the importance of encouraging the cultivation of forest trees on the prairies, but did not think that the experiments in the United States had been a success.

> "There must be a much more comprehensive organized system, similar to that in Germany, and in France, and in Norway; and it must be under the constraint of the Government."

He went on to say that the government was taking some action in that matter. Similar suggestions were made frequently in succeeding years. It is interesting to note the references to European-style forestry. It reflected an attitude which had a strong bearing on subsequent forestry practices, which came to have a strong plantation and management orientation.

The encourgement of tree planting was discussed in the North West Territories Council in 1884 (N.W.T. 1884). A bill entitled "An Ordinance to Encourage the Planting of Forest Trees" was subsequently passed. At the same meeting of council, the Committee on Civil Justice considered, then rejected, a petition to raise the minimum penalty authorized by the prairie fire ordinance to 50 dollars. That committee also considered whether or not wilful firing of the open prairie could be covered under federal statute, but had some doubts about it.

The centre of the timber industry in Alberta in 1884 (Canada 1885a) lay in the Red Deer country along the Clearwater, North Saskatchewan and Old Man's (now Oldman) River. The reports of the Crown timber agents in Edmonton and Calgary made no reference to fire, but their duties lay largely in the collection of dues and inspection of woods operations.

The ecological effects of fire were astutely observed by William Ogilvie who surveyed block and township lines in Alberta in 1883 (Canada 1885a). He included the following description in his survey report:

> "Near Peace River the trees are small, and the land has every appearance of having been a prairie some years ago.
>
> "On Heart River there are many patches of good prairie, which would, as far as soil is concerned, make excellent farms. Also, at the west end of Lesser Slave Lake, there are some extensive pieces of prairie, having very good soil.
>
> "The forest is gradually encroaching on those prairies; and, should no fires occur, they will, in the course of a generation or two, be all poplar woods.
>
> "The country around Athabasca Landing is - on the south side of the river - partly open, a fire some years ago having devastated the bush for miles around, both up and down the river. Nearly all the original timber is now lying, and there is a second growth springing up. Should a fire again occur, in the

> course of a year or two, quite a large tract of country will be converted into prairie."

The annual report of the Department of the Interior for 1884 referred to the report by J. H. Morgan, appointed by the Governor General in Council as a forestry commissioner "to examine into and make a Preliminary report on the subject of the protection of the forests of the Dominion and the planting of forest trees upon on extensive scale". His report was summarized for inclusion in the annual report (Canada 1885a):

> "Mr. Morgan prefaces his report by stating that he is deeply convinced of the necessity for a more specific and general investigation into the question involved: that the increasing and reckless waste of our forests, brought about as much by the destructive carelessness of individuals as by accidental fires, has not received that attention from the Governments of the Dominion and the several Provinces which the future will show to have been necessary. The inevitable consequences of future neglect in this matter, he predicts will be, among other climatic changes, drought, varied by sudden and destructive flood, and a deterioration in the quality of the soil;....."

He commented on the basic problem of not knowing the extent and nature of the forest resources as a result of the absence of data. However, examples in eastern Canada and United States were cited to show the undesirable consequences of uncontrolled cutting and fire. Morgan dealt with the question of the organization of a system of forest management and referred to examples, again from European countries. He also stressed the importance of schools of forestry for training qualified staff. He recommended appointment of a commission to cooperate with similar commissions from every province in the Dominion to deal with the questions of the protection of the old and the reproduction of new forests.

One of the most significant observations about the wildfire problem was made by the Hon. H. G. Joly de Lotbiniere in his Report on the Forests of Canada, as quoted by Morgan:

> "The difficulty of guarding against fire in such immense and distant forests as ours is enormous; and as for extinguishing it when once fairly started, the power of man cannot succeed. It will sweep onward as long as it can find food, leaping at one bound over such rivers as the great Ottawa and Miramichi, and will only stop when brought to bay by large lakes, or when it reaches rocky or barren ground, with nothing to burn; it will run riot for weeks, until starved for want of food or drowned under torrents of rain."

Morgan described some of the European measures used to control fires, referring to such techniques as fuels management, fuel breaks, strict laws and enforcement, and large staffs. He concluded that the "immensity of our forests, and their great distance from settlement, renders any such measures impracticable in Canada. There remains, then, but one hope for us, and that is in *prevention*".

Referring to the vast prairie land in the northwest, Morgan was quoted as follows, setting the stage for future tree-planting programs on the prairies.

> "The climate of this vast territory is one of the healthiest in the world, but it is very dry, and ought, therefore, to have a large proportion of its area in woods. Woods would have a most beneficial and ameliorating effect on the climate. They would temper the cold winds of the spring and retard the autumnal frosts....."

In a book published by himself in Montreal, James Little (1876) discussed the timber supply question of Canada and the United States. Little projected that at the then rate of forest consumption there would not be a foot of timber left east of the Rocky Mountains within a dozen years. He was referring largely to over-cutting, but he went on to describe the far greater destruction of the forest by fire. He advocated large-scale tree planting, including tree planting on the prairies. Although apparently not quoted by Morgan, the alarmist description was characteristic of the tone of writing of the early North American forestry movements, and undoubtedly had some bearing on conditioning a greater response to the problem of fires.

Sir John A. Macdonald moved an amendment to the Dominion Lands Act which was reported in the Commons Debates, April 16, 1884 (Canada 1884b) which in his words "seemed to meet with very considerable favour" in the House. It was a precedent-setting amendment with important implications over the next 30 years.

> "The Governor in Council may, from time to time, for the preservation of forest trees on the crests and slopes of the Rocky Mountains, and for the proper maintenance throughout the year of the volume of water in the rivers and streams which have their sources in such mountains and traverse the North-West Territories, reserve from sale, lease or licence, such portions of the land in the North-West Territories, on, adjacent to, or in the vicinity of the Rocky Mountains, as to him appears expedient so to reserve, and may define the limits or boundaries of such reserves; and may set aside and appropriate such lands for a forest park, or forest parks, as he deems expedient, and may appoint officers for the preservation of such reserves and forest parks."

5.2 The Early Railway and Settlement Years 1885-1899

The year 1885 was an eventful one. Political frustration among the Metis and Indians compounded by changes brought about in their ways of life through disappearance of the buffalo and increased settlement led to the North West Rebellion and the subsequent capture, trial and execution of Louis Riel (McInnes 1947). The last spike on the Canadian Pacific Railway was driven, and a reserve for "sanitary purposes" was made around the hot springs at Banff (Fraser 1969).

The annual report of the Department of the Interior for 1885 (Canada 1886) mentioned the "unfortunate Half-breed and Indian outbreak" which slowed the tide of immigration, and the fact that it interfered with logging, resulting in reduced timber receipts to the Crown. Not mentioned were extensive burns which apparently occurred in Saskatchewan and Manitoba in 1885, referred to then and still as "The Riel Burn".

The Interior Department report for the year 1886 (Canada 1887) devoted a great deal of space to the Banff Hot Springs Reserve. This area was to be protected, developed and actively promoted to encourage large numbers of visitors. Among some of the recommendations made, reflecting development-oriented attitudes prevailing at the time, were construction of fire breaks to protect the area, introduction of pheasant and quails, "extirpation" of coyotes and foxes to ensure the survival of the birds, and planting of exotic tree species.

The problem of prairie fires was addressed specifically for the first time in a Department of the Interior annual report (Canada 1887). The general reviews in the report of the land board indicated that there was a need for prevention, for mobilization of local people to fight fires, for construction of fuel breaks and appointment of fire guardians. It appears evident that in spite of the many concerns expressed to this point, no effective means of prairie fire fighting had yet been developed. The report is reproduced here in light of its wide-ranging implications.

> "Too great care cannot be exercised in respect to prairie fires. Probably the difficulty may be met by increasing the fine to be imposed for failure in turning out to extinguish them and by defining the radius within which all are required to render assistance. On two occasions this season the benefit of organization was conspicuously demonstrated. Fires that formerly would have been thought beyond control were completely subjugated in a few hours; of course this was done at the sacrifice or permanent injury of a few horses, but this would bear

> but a small percentage to the loss that could have been incurred had such fires been allowed to run. As settlers in the country increase and artificial fire breaks are established where no natural ones exist, the liability to loss will rapidly decrease.
>
> "In my annual report for 1884, I alluded to what will no doubt sooner or later prove a valuable sheep country, viz, the Missouri Coteau District. Without, however, as stated in that report, the establishment of artifical firebreaks, it must remain perfectly valueless. Never an autumn passes that this district is not run over by fires. In Manitoba and portions of the North West, as you are aware, very serious losses have been occasioned by these fires, and much suffering will doubtless ensue during the coming winter from this cause. If the practice adopted in the ranching country in the United States was also taken advantage of in these districts, probably 95 per cent. of the loss could be averted.
>
> "The practice I refer to is this: Fire guardians are appointed for every district, the area of each, where there is considerable settlement, not being large, but these guardians do not necessarily confine their duties to their respective districts. Every male within the district is enrolled, somewhat similar to the volunteer fire brigades in our small towns and villages. A certain number supply horses and waggons, with barrels of water; all the remainder who have saddle horses turn out with them and carry a sack filled to a small sized bundle with old blankets or other sacks; and those who have not horses go on foot. When a fire is seen all within ten miles (sometimes a longer limit is fixed) make as fast as they possibly can to it, the sacks are dropped into the water barrels, and when wet, it is incredible the rate at which a fire may be extinguished, particularly at night when the wind is blowing moderately, if at all; in the majority of nights the wind ceases, or blows very gently. Four men on horse back, accompanied by a team, driver, and two barrels of water have frequently put out ten miles of fire. Any person failing to turn out is subject to a fine varying from $10 to $100, and in default to imprisonment.
>
> "Any one who has observed prairie fires will admit that with such an organization very little danger will be incurred. It is too much the practice of settlers to neglect prairie fires, trusting to fortune that it will not come near their improvements or stock."

The advent of the railway quickly exacerbated the prairie fire problem. It is interesting in the same report (Canada 1887) that the North West Mounted Police commented on prairie fires, most of which were reported to have started by the Canadian Pacific Railway. Eight prosecutions for setting fire to the prairie were noted, but six of them were dismissed for insufficient evidence. The North West Territories Council (N.W.T. 1885) also reported that many of the fires that had swept the country had been started by railroad engines. The Canadian Pacific Railway engine 374 has been on display in Vancouver's Kitsilano park following its last run across Canada in 1955. This locomotive pulled Canada's first transcontinental train into the new city of Vancouver in May 1887 [4]. It is interesting to speculate on its influence on starting fires.

---

[4] Information on display plaque

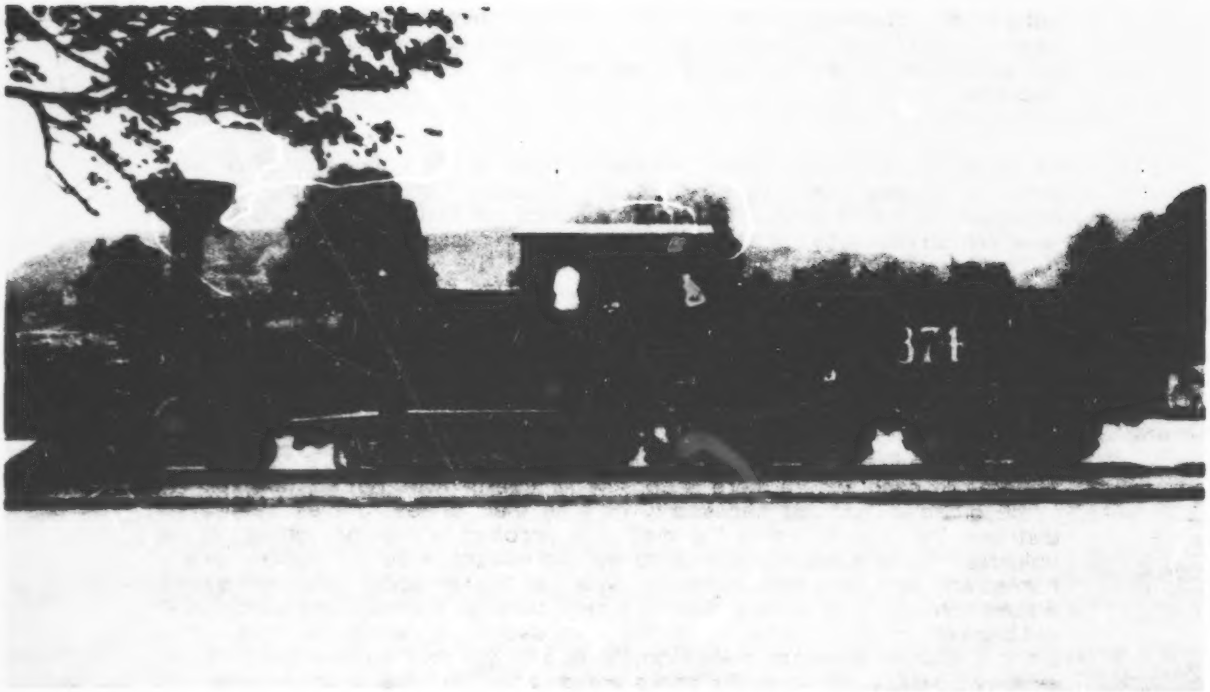


Figure 19. Canadian Pacific Railway engine 374 pulled Canada's first transcontinental train into Vancouver in May 1887. (Viv Williams)

The North West Territories Council (N.W.T. 1886) passed an ordinance in 1886 creating fire districts, and appointed fire guardians, seven of whom were located in Alberta (Canada 1887). Concerns were evidently being translated into legislation. The council also discussed passing a resolution asking the federal government for a grant to aid in making "fire-brakes" in the territories and requesting financial help to assist in carrying out the fire district ordinance.

The report by J. H. Morgan was evidently well received by some in the House of Commons (Canada 1885b). Mr. Cockburn stated on February 23, 1885:

> "..... I think the Government have taken a very proper step in enquiring into the subject of forestry and the prevention of bush fires. It is most disheartening to see extensive territories, where magnificent pines have been burned, and if anything can be done to stop this destruction of our forests, it will be a great public benefit....."

Morgan was appointed commissioner of forestry on July 7, 1887, with a fairly broad mandate to report on the best methods of growing trees on the prairies and "of preserving and protecting the forests in existence in the Dominion at the present time" (Johnston 1973).

Some signs of progress in the hoped-for development of the West were noted in the N.W.T. Council of 1887 (N.W.T. 1887) where it was pointed out that a market for lumber produced in the territories had opened up not only locally but even as far as the eastern provinces, along with markets for many of the other products of the territories. The comment was made: "All this is now to be seen in a Country, which a few years ago was thought to be quite inaccessible and practically of little value."

That council also passed a resolution that the lieutenant-governor be requested "to take such steps as will secure more fully the services of the North West Mounted Police Force in the prevention and extinction of prairie fires." One of the councillors later put on record the fact that they had received "very satisfactory assurances of assistance from the Commissioner of North West Mounted Police, in putting a stop to Prairie Fires in the future." The report continued optimistically:

> "The Commissioner having assured the Committee that he will have placed at various points along the Railroad, a sufficent force to have complete supervision over nearly the whole line of Railroad in the Territories, which together with the assurance received from Mr. Whyte, General Superintendent

> of the Canadian Pacific Railway, that every precaution will be taken to secure protection and prevent spread of fires from locomotives."
>
> "They therefore believe that when such action is taken Prairie Fires will be greatly diminished if not altogether stopped in so far as the Canadian Pacific Railway is concerned."

But there was no money from the Dominion to fight fires. The minutes reported that the federal government, while recognizing the importance of support to the Fire District Ordinance, regarded the problem as a purely local and municipal object and could not recommend any grant from the Dominion Treasury towards it.

In the Rocky Mountains Park of Canada (Canada 1888) the first reference to fuel management was made in 1887. "With a view to lessening the danger from fires, over 100 acres of dead timber have been cleared, and the work of underbrushing in the vicinity of the highways and thoroughfares, which has been undertaken for the same purpose, is making fair progress". References to fires appeared more frequently, probably as a result of increased human activities and increases in staff to report on them.

William Pearce, superintendent of mines in Calgary, made many pertinent observations on fires in his district, along with other activities. In the report for 1887 (Canada 1888) he wrote a section on prairie fires:

> "The greatest source of danger to the cattle industry and also to the smallest settlers in this country is prairie fires."
>
> "This subject was alluded to at length in my report of last year, and after giving it considerable attention since then, I am of the opinion that the origin of not more than five per cent. of the fires can be discovered. They are, no doubt, in the vast majority of cases, started accidentally; but if the truth were known, they are also lit by 'pilgrims', ie. - those who have been only a short time in the country. Many are caused in attempting to make 'fire breaks' around buildings, stacks, &c. No doubt, in many cases, the fires are thought to be wholly out, and the parties have left the scene. An unperceived smouldering, however, is going on in some particle of dry cow-dung or in an ant-hill, and hours afterwards a strong wind arising carries sparks from the smouldering matter to the neighboring grass, and the result is probably the destruction of many thousand dollars worth of property. There is enough property destroyed each year in this country by prairie fires in the settled district to put a fire break 30 feet in width around every section. If these strips for fire breaks were ploughed at the time the sod thoroughly rots, they could thereafter be cheaply maintained by occasionally running a cultivator over them."
>
> "Might it not be well to enact that no fire-breaks should be made except by ploughing; and, further, that even when fires are put out this shall be done only under the supervision of some official in each district authorized to act, and only then when whatever aid he desires is furnished. Make the penalty severe for all fires started accidentally or otherwise. The subject is within the

jurisdiction of the North-West Council."

Reference was also made to destruction of timber in the section of the report dealing with timber, mineral and grazing lands.

> "In connection with the preservation of timber there is one essential point which should not be passed without remark, and that is the necessity of providing some better means than at present exist to prevent the destruction, annually, by fire, of millions of feet of timber throughout Manitoba and the North West Territories. A person who has lately returned from exploring the North Saskatchewan and its vicinity, between Calgary and Edmonton, reported that during last summer miles of valuable of timber had been destroyed through the carelessness of Indians and others in not extinguishing their camp fires when moving from place to place....."

The report went on to state that the department was acting on a suggestion made by the Crown timber agent at Winnipeg to issue permits to parties to cut the burnt timber at a reduced rate of dues. The object was to salvage the burnt timber as much as possible, and to prevent, in the future, the spreading of fire to the green timber.

J.S. Dennis, inspector of surveys, wrote that prairie fires occurred largely in the fall and destroyed not only grass but hay needed for winter feeding (Canada 1888). From his observations he was satisfied many of the worst fires were started by sparks from railway locomotives. He referred to an experiment in the Maple Creek District conducted by settlers assisted by the mounted police and the railway company which consisted of plowing "a couple of furroughs" on each side of the railway track, about a hundred yards distant from the track and then "burning the grass between the furroughs and the track". Unfortunately, the experiment did not succeed since the whole district was burnt over by a fire started by locomotive sparks which the wind carried outside the burned strip.

The superintendent of Rocky Mountains Park provided details about fire problems during the summer of 1886, made worse by large quantities of dead and fallen timber. Besides the danger to the park, he was concerned about the many expensive buildings then being erected. He continued the next year (Canada 1889a): "In the past, fires have ravished portions of the park disfiguring its natural beauties."

Active programs of fire prevention were mentioned for the first time in the Department of the Interior report for the year 1888 (Canada 1889a). The report of the clerk of timber, mineral and grazing lands commented:

> "Agents were told to instruct their forest rangers to impress upon settlers and others with whom they came in contact during their trips of inspection, the

> great personal interest which all residents have in preventing the country from being denuded of its timber, how much the future value of the property would be reduced by its destruction, and the duty which they owe to the Dominion as law abiding citizens in bringing to justice anyone whom they know to have been guilty of an infraction of the laws and ordinances enacted for the prevention of prairie and forest fires. The agents were informed that the impression is cultivated that these fires are generally started by Indians, but while a good deal of the destruction of the timber complained of might doubtless be traced to the carelessness or ignorance of Indians in putting out their camp fires, it was also certain that the negligence of white men had a great deal to do with it. The Agents were further told to instruct their forest rangers that when they were cognizant of a fire raging in any portion of the country, or even when they were made aware that a fire had taken place, they were to use every means in their power to ascertain how it originated, and take steps to bring about the arrest of the person or persons who started it."

> "The Department of Indian Affairs has co-operated with this Department, by impressing upon the Indians the great personal interest which they have in preventing the country from being denuded of its timber; also by distributing through its agents copies of the Manitoba Act, and of an Ordinance of the North-West Council for the prevention of prairie and forest fires. These laws printed in the form of posters were also spread broadcast over the country by the agents of this Department."

> "In addition to prairie and bush fires having been started in the manner above indicated, it is alleged that fires destroying a large quantity of timber had been started by sparks from locomotives, caused it may be from the wood burning engines not being provided with spark arresters. The attention of the railway companies has been called to this fact, and it is to be hoped that they will try to prevent in future fires from this source."

Well-intentioned though these directives may have been, it is difficult to see any far-reaching effects as a consequence of the seemingly haughty approach to fire prevention.

William Pearce (Canada 1889a) addressed the problem of prairie fire again, in the same Interior report, stating:

> "This subject is receiving a considerable share of public attention, and the present session of the North West Council will probably not adjourn without legislation thereon, which, it is to be hoped may, at least to a certain extent, meet the difficulty."

The Council of the North West Territories did pass a revised ordinance respecting prairie and forest fires in 1888. The provisions remained essentially the same, although the maximum fine was increased to $200 and a new clause was added directed toward fires started by travellers. The full text is included in the Appendix.

Application of a clause in this ordinance to prosecution for a fire started by a Canadian Pacific Railway locomotive was struck down in 1889 upon appeal of the defendants (Beck 1900). The summary of the case outlined the nature of the interpretation:

> "An ordinance of the Territories prohibited the kindling and placing of fire "in the open air in any part of the Territories," except for certain purposes. The defendants, who were respectively fireman and engineer on a freight train, were severally convicted of a breach of the ordinance upon evidence to the effect that sparks from the fire which they had kindled in the locomotive engine had kindled a fire on the adjacent prairie, there being, as the magistrate found, no evidence of improper construction of the engine, or of negligence on the part of the defendants. Held, that these facts afforded no evidence of the defendants kindling a fire "in the open air"."

Despite continuing difficulties of organizing to control forest and prairie fires in the North West Territories, and other problems for which funds were not available, there was a marked dichotomy of view about appropriate levels of funding. Debates in the House of Commons reflected concern about the cost of administering that large area. In a discussion about appropriations for Dominion lands in April 1889 (Canada 1889b) Sir Richard Cartwright stated:

> "This is one of those items which ought to have the serious consideration of the House. When we come to put together the sum for Dominion Lands.....we find that we are paying about $420,000 a year, while the total annual receipts from all sources amount to something under $220,000. Now, when we remember what was promised to this House, when we remember how continually hon. gentlemen opposite were in the habit of asserting that we would receive, not a sum equal to our own expenses, but a sum that would leave us with a net profit of $58,000,000 or $70,000,000 by 1890 or 1891, we have a very good right to complain......I must say that a large number of these offices appear to be made merely to provide employment for persons whom, for various reasons, it is not convenient to appoint here. The great mass of this money must necessarily be wasted....."

Mr. McMullen added the comment: "Now, it is absurd to say that it is necessary that we should have the enormous number of officials we have in the North West." The minister, Mr. Dewdney, explained that the expected revenue from land sales had not been realized, but pointed out that the railways were selling lands granted to them, and the country had the advantage of the railways. He also pointed out that the revenue of the department as a result had been almost solely derived from timber dues and pre-emption payments. These remarks indicate why more attention was evidently paid to selling of timber and collecting of dues than to the non-revenue-producing activities of forest protection. Dewdney spent some time in his reply to try to convince the House that the expenditures were not excessive compared to the work that had to be attended to.

During the same debate a Mr. Mills stated that he had received a petition from some of the settlers around Battleford complaining of the charge the government made for cutting dead timber for firewood and fence posts. He complained:

> "Here are people, hardly able to purchase the absolute necessaries of life, compelled in that cold climate to pay large sums of money for the privilege of getting the necessary firewood to keep them warm in the winter season. How can you expect that poor people will be contented to remain in a country under those circumstances?"

The minister told the House that he had come to the same conclusion and, in response to a delegation of members from Manitoba and the Northwest, he had agreed six weeks previously to take the duties off the burnt and dry firewood.

The appointment and salary of the forestry commissioner, J. H. Morgan, also came in for close questioning. Evidently not all "hon. members" were sufficiently conservation-oriented to overlook the patronage aspects of these appointments.

The problem of protecting timber from fire apparently was receiving increasing attention, however. For the year 1890 (Canada 1891) the deputy minister of the interior reported:

> "The subject of the protection of the timber of Manitoba, the North-West Territories, and that on the Dominion Lands in the Province of British Columbia, has received, as in former years, much and very careful consideration. At the beginning of the present calendar year a circular letter was sent to all persons who had acquired timber berths, inviting them to co-operate with the Government in giving effect to the provisions of the Act for the prevention of forest fires, and asking them to share with the Government the expense of maintaining forest rangers to guard their berths from fire. The proposition has been readily accepted by the licencees from whom replies have so far been received. Effect, however, cannot be given to the proposition until the portion of the expediture involved which has to be paid by the Government has been voted by Parliament."

The deputy minister also reported that no easy answers to the problem of tree culture on the prairies were evident, and referred to the report by J. H. Morgan. He stated that experiments being conducted by the Department of Agriculture under the supervision of Professor Saunders at the various government experimental farms in the Northwest were more likely to be useful than anything else so far undertaken by the government.

The seeming coolness of the deputy minister towards the Morgan report was discussed revealingly by Johnstone (1973). It seemed clear from the tone of Morgan's report and the comments of Burgess, the deputy minister, that Morgan and the department were on a collision course. Besides proposing a handbook on tree plantation based on the United States experience, Johnstone wrote, Morgan called for:

".... an overall plan that could be implemented by the federal and local governments, he recommended that the federal government begin a program of forest tree plantations through the Territories. Morgan strongly criticized the way forest fires were started in the Railway Belt by the failure to provide screens on the smokestacks of the locomotives; he warned about the need to protect against indiscriminate cutting and forest fires in the mountains at the headwaters of the major water systems; he emphasized repeatedly the need to establish "forestal experimental stations". This, of course, required trained and experienced foresters, and he went into considerable detail about the schools operating in Europe, and about how they were utilized by various governments. He wondered by (sic) this could not be done in Canada, since we were spending large sums of money in other projects that were not "of more pressing necessity than forest culture on the great plains of the North West.

"Finally, after contrasting the advances made in forestry in the rest of the world with the lack of such developments in Canada, Morgan urged the Dominion Government to sound the note of warning to the provinces regarding the destruction of the forests, and take vigorous action in the Territories which were under its immediate control.

"The reaction of Burgess, contained in the same Annual Report of the Department, was that all was for the best in the best of all possible worlds. No extra staff was needed for forest fire protection as there would be fewer fires as the country became more settled. Besides, trees reestablished themselves quickly in burned-over areas, as he had seen for himself. There would always be lots of wood for settlers. Reforestation was something for the Department of Agriculture to handle. It was now clear that Morgan's many excellent recommendations would not be implemented and that they certainly would not be while Burgess represented the official government view.

"It is intriguing to speculate as to why Morgan was appointed Commissioner of Forestry in the first place and as to why his numerous recommendations were almost completely ignored. We know that Macdonaald had expressed concern for the forests and we know that the American Forestry Congress had increased the pressure on the federal government to do something. Morgan's appointment, even though a patronage appointment, as nearly all such appointments were in the last century, had been in response to pressure. Whether it had been made as a result of genuine concern about the forests on the part of Macdonald or whether it was intended simply as window-dressing on the part of his regime is a point of speculation. Certainly Morgan's reports showed that he took his job seriously, and his pioneer work was undoubtedly studied by the founder of the Canadian Forestry Service. But it is probable that Macdonald, involved in his gigantic struggle over the building of the Canadian Pacific Railway, was not prepared to tackle problems in western Canada if he could postpone them."

Johnstone (1973) also suggested that another factor that may have rendered Morgan's role abortive was the key role of the Department of the Interior in disposing of Crown lands. With the opening of the west by the CPR these lands suddenly acquired great speculative value. The Liberals were later able to list the names of 50 prominent Conservatives who had obtained 50-mile timber limits free of charge during the period from 1878 to 1896 while the Conservatives under Sir John A. Macdonald were in power. Johnstone observed that it was not too surprising that Morgan's proposals, including one that permanent forests be set up, were not greeted with much enthusiasm.

William Pearce also referred to tree culture in his report for 1890 (Canada 1891), writing that maximum success would be reached only by the establishment of local nurseries, which would grow trees from seeds obtained from districts where climatic and other conditions were similar to those of the Northwest. Pearce believed prairie fires were probably of more concern to the territories than any other issue at the times. He suggested a volunteer system be arranged:

> "There is no doubt that organization on the lines of volunteer fire brigades would tend greatly to lessen the wide-spread destruction which these fires occasion, particularly in the partially settled districts. As it is at present, unless a settler who sees a fire is certain that it is making directly for his property he is indifferent as to how far it spreads. The results of regulations which would secure efficient fire guardians in every district and the proper turning out of the settlers in any locality where a fire makes its appearance to extinguish it would be extremely beneficial. An organization somewhat similar to that in force in the Mormon Settlement at Lee's Creek for this purpose would, I think, if adopted in other settled parts of the country, serve to greatly reduce the number and extent of these fires."

Timber dues on fire-damaged timber were reduced in 1891 in an attempt to encourage its utilization - a precedent which continues today. The deputy minister reported (Canada 1892):

> "In view of the fact that large tracts of timbered lands had been damaged by fire rendering the timber thereon valueless unless it were utilized within a few years, it was considered that if the royalty on lumber produced from this class of timber were reduced it would encourage the mill-owners to first use the burnt timber, and thus preserve the green. The Governor General in Council, by an Order dated the 27th of June, 1891, reduced the royalty from five per cent, the rate prescribed by the regulations, to two and one-half per cent. Since the change came into force it is noticed that the object desired has been attained, as the greater portion of the lumber now being sold is manufactured from timber injured by fire."

William Pearce reiterated his concerns about prairie fires, and the Council of the North West Territories amended the ordinance respecting prairie and forest fires. A copy of the amendments is included in the Appendix. The changes appeared largely editorial, presumably to enhance their enforcibility. The assistance of the North West Mounted Police in fire protection was evidently well-secured with the appointment of 66 members of the NWMP as fire guardians (Canada 1892).

The persistent problem of railway fires in the Northwest was raised again in the House in April 1890 (Canada 1890b) where a Mr. Davin moved the following resolution:

> "That in order to further the prevention of prairie fires, the Railway Act be amended to enable railway companies in the Territories to enter upon uncultivated lands 200 feet on each side of the track, and that such railway companies be compelled, at proper times between each year, to plough, as a fire-guard, a continuous strip of not less than 6 feet in width on the outer part of such 200 feet and parallel with the line of railroad, and burn the prairie grass within such ploughing and their tracks; provided such fire-guard need not be constructed within the limits of any town or city, nor along the line of railway running through the mountains or over lands where ploughing will be impossible or unnecessary;
>
> "And that any railroad corporation operating its lines of road, or any part thereof, shall be liable for all damages by fire that is set out or caused by operating any such line of road, or any part thereof, when such railroad company has failed to plough a fire-guard as above provided; and any such damages may be recovered by the party damaged in any court of competent jurisdiction."

The minister of the Interior, Mr. Dewdney, said the matter had been brought to the attention of the government and that it had been given serious consideration. He understood that the minister of railways intended to propose some amendment to the Railway Act which would provide to some extent for fire guards. On the strength of that assurance the motion was withdrawn.

Loss of timber through fire continued to be reported. William Ogilvie, a dominion land surveyor, (Canada 1893) described some of the timber along the Athabasca Valley around Athabasca Landing and observed that the timber could be used when the railroad reached that point. However, he added a rather pessimistic comment:

> "I am sorry to say, however, that long before it will be necessary to resort to these (timber resources), much of it may be burned, as such is the case along the trail between Edmonton and the Landing."
>
> "In 1884 I passed over this trail twice and then saw many groves of fine spruce, but last summer I saw that much of the best of this timber had been completely burned off. [5] Then the country in the immediate vincity of the Landing was all heavily timbered, much of it merchantable. Last summer especially in the Ta-wat-an-a Valley and vicinity, the country resembled prairie nearly as much as the country in the immediate vicinity of Edmonton does."
>
> "As there is no very pressing necessity for any one to settle at present and the timber will yet be valuable, it is a pity that fires should make such havoc, but under existing conditions it is impossible to prevent them."

---

[5] MacGregor (1952) described a "fire of 1894" which apparently started north of Athabasca Landing, burned out the timber along the Athabasca Trail and running south-east across the North Saskatchewan River. The description fits Ogilivie's comments, but the dates do not quite coincide. Ogilvie's record is probably more reliable, since he was writing from first-hand observation.

Meanwhile, for the benefit of the more open parts of the country, the North West Council passed *"An Ordinance to encourage the planting of trees"* in 1892 which stated simply:

> "The Lieutenant-Governor-in-Council may in each year by Proclamation appoint a public holiday to be observed throughout the Territories for the planting of forest and other trees."

Given the financial constraints and development problems at the time, this resolution is probably as strong as could expected. At that same session in 1892 the fire ordinance was again amended, a copy of which is included in the Appendix. As before, the changes were relatively minor.

Responsibility for immigration was transferred from the Department of Agriculture to Interior in 1893 (Canada 1893), and continuing concern was expressed the following year over the low level of homestead entries (Canada 1894). It was evidently important to the government to increase its revenue through sale of lands in the West. Promotion of tourism in the Rocky Mountains Park also continued to be evident, reflecting the concern for development and generation of revenues.

Irrigation was mentioned in the Department of the Interior annual reports for the first time in 1893 by William Pearce, superintendent of mines (Canada 1894a). He referred to great interest in using the waters of the rivers and streams flowing out of the Rocky Mountains, and also the streams and basins of the Cypress Hills. This interest led to developments which had significant implications in subsequent establishment of forest reserves in those regions.

The possibility of establishing timber reserves was also addressed in that report. The Crown timber agent in Winnipeg suggested reserving unsettled land not suitable for agriculture, as well as maintaining and preserving of smaller areas of wood found in areas more favorable to agriculture. The aim would be to try to ensure a wood supply for local needs then and for future generations, while maintaining a forest cover for hydrologic purposes. According to Leavitt (1915) the policy of setting aside such lands was adopted by the Dominion government in 1893. Moose Mountain Reserve was the first, established in 1894 under an order-in-council.

Winnipeg Crown timber agent E.F. Stephenson also reported on a questionaire survey which he addressed to town reeves and other prominent settlers in the country from eastern Manitoba to the base of the Rocky Mountains. The results of the survey showed concern over how long timber would last at the present rate of cutting, and the undesirable effects wood shortages would have on settlers. The majority favored the setting up of permanent wood reserves in their areas, and believed that the timber would be better preserved if it were managed by the government. Virtually all responded that fire had done a great deal of damage to timber in their districts, that there had been virtually no convictions for violating the law relating to setting a fire, but that none of the settlers had done any tree planting on their lands. All agreed that fire-killed timber should be harvested before green timber was cut. The result of that survey seemed to show agreement with fire and timber policies developed so far, although not effectively carried out, and lent support for policy changes to come.

The prairie fire problem continued. As outlined by Pearce (Canada 1894a):

> "The loss occasioned through prairie fires has been above the average; in some cases causing loss of life. Vigorous steps have not been taken to prevent these fires or the danger resulting from them: that such could and should be done, is an undoubted fact. Good regulations combined with vigilance and the prosecution of the guilty parties would in a year or two prevent eighty per cent of them. The only explanation is the 'happy-go-lucky' method employed by most of the citizens in the west. If they could only lay the responsibility on other shoulders than their own, they would have a grievance before which everything heretofor recorded would fade into insignificance."

The superintendent of Rocky Mountains Park reported on a new fire problem that year. One potentially serious fire north of the railway station was described by the deputy minister:

> "......Mr. Stewart (Park Superintendent) attributes this fire to tramps, who, not withstanding that every effort is made to keep them out, are frequent visitors during the summer, it being very difficult to follow them up in the woods. The presence of this class of persons in the park is a constant menace to its very existence, owing to their carelessness in regard to fires, and I quite agreed with him that the law should be rigidly enforced against them."

But still, in Ottawa, opposition members in the House were critical of the level of Interior Department expenditures. A Mr. Davies (PEI) noted that salaries for Dominion lands and Crown timber agents totalled $24,000, yet they collected revenues of only $98,000 in connection with Crown timber which he felt "to be an outrageous state of affairs" (Canada 1894b). The minister, Mr. Daly, explained that they collected other revenues, too, and later further defended his position. Sir Richard Cartwright commenting on the

$43,726.25 for salaries of clerks and outside service, forest rangers and intelligence officers stated:

> "Looking at the exceedingly small returns in the shape of revenue, I should like the Minister to state his views with reference to this expenditure..... Does he not think that considerable reduction could be made?"

The major concerns within the Department of Interior in 1894 (Canada 1895a) remained immigration and settlement, development of the Rocky Mountains parks, and the development of irrigation. The North West Irrigation Act was passed in 1893, and 3,000 square miles surveyed. E. F. Stephenson discussed forest reserves, and recommended a reserve on the east slope of the Rocky Mountains in connection with the developing irrigation projects. No extensive fires occurred in the Rocky Mountains park, but the superintendent observed a problem which has a bearing today on fire management policies in parks:

> "Notwithstanding this fact, the park was enveloped in smoke for some weeks, caused by distant fires, which was very disagreeable and disappointing to visitors and sight-seers."

This reaction is remarkably similar to concerns expressed by visitors to Grand Teton National Park in Wyoming in the 1970s when the first so-called "let-burn" fires resulted in heavy smoke haze which obscured the peaks from visitors, most of whom had travelled a long way to see them.

The commissioner of Dominion lands addressed the fire problems on Dominion lands that same year:

> "How to preserve the valuable timber of this country from destruction by forest fires and how to conserve and dispose of it in the best interest of the country at large are matters of supreme importance.
>
> "On this branch of the subject (forest fires) I thought it well to consult all our agents as well as other residents of the country whose experience might be supposed to qualify them for offering advice of value in this connection.
>
> "The main conclusion at which I have myself arrrived in the consideration of this matter is that some amentment (*sic*) is required to the statutes of Manitoba, and that effective means, both in Manitoba and the Territories, should be provided for ascertaining promptly the origin of bush and prairie fires, and for enforcing adequate penalties against the individuals who may be proved guilty of the offence of starting them.
>
> "I am satisfied that excellent results will follow the agitation of the whole

> question, and the consultation in regard to it in which you are now engaged with the provincial and territorial authorities."

The problems of prairie fires were addressed at length - by William Pearce, superintendent of mines, the Crown timber agent in Winnipeg, the lieutenant-governor of the North West Territories, and by the commissioner of the North West Mounted Police and many of his district commanders. Some of the remarks are cited here to convey the nature of the problem.

Pearce, superintendent of mines in Calgary, again referred to the extent of damage caused (Canada 1895a). He also noted that the North West Territories Council had offered a large prize for the most practicable invention for making effective fire guards rapidly.

E. F. Stephenson, Crown timber agent in Winnipeg, commented on extensive forest and prairie fires and added.

> "These disastrous fires are almost certain to be of annual recurrence unless measures are taken by the Federal and Local Governments for bringing to punishment those persons to whose carelessness or criminalty the fires owe their origin. The prevention of forest fires is essential to the success of any scheme for the preservation and restoration of our forests. Fires annually destroy more timber than is taken for use by the settlers. I am frequently met with the question, 'Why are the penalties of the law enforced against a man for taking a few loads of wood from Crown Lands when so little effort is being made to bring to justice those parties who are responsible for letting fires run into the timber, which yearly destroy thousands of cords?' I may say that I have made a careful study of the fire question with the view of offering suggestions to be used in amending the laws respecting the prevention of prairie and forest fires to make them more workable. My report on this subject is in your hands, having been forwarded through the Commissioner of Dominion Lands."

C. H. MacIntosh, lieutenant-governor of the North West Territories, included his concerns:

> "Despite legislative measures adopted by the Territorial Assembly, it appears no diminution in the number and area of prairie fires - rather the reverse. ....The concensus of opinion is that a large proportion of the fires is caused by the increase of railway mileage through the territories, as well as the increase in population. The North-West Mounted Police have rendered valuable assistance, and through their agency two indisputable cases of prairie fires having been started by lightning were extinguished."

The commissioner of the North West Mounted Police, L. W. Herchmer, described the problem (Canada 1895c):

> "Owing to the extremely dry summer, prairie grass would burn this year in July, and several disastrous fires took place before we could get out fire patrols. Although the Ordinance provides for severe and deterrent fines, the local Justices of the Peace will not enforce them."

> "The worst feature in these fires is the great apathy shown by most of the settlers in their own defence, as, unless a fire is actually is at their own door, they will not generally turn out to help their neighbours until they are made to do so by the police; but the moment the glare of a fire appears on the horizon, no matter if 40 miles away, every possible means is taken to force the police to send out patrols to put it out, and last season we were put to great expense in this matter, and generally on false alarms. In the case of those fires that did occur, the settlers, if ordered out by the municipal council in time, could in every case have easily put them out themselves, and generally before damage was done. Waiting for the police, in spite of our exertions, often means, owing to the distance, great damage before we can take hold."

> "The extra cost of fire patrols this year in Assiniboia has been large; this is occasioned by having to board men and horses at farm houses during the dangerous seasons."

> "If settlers were made to put their statute labour on ploughing the road allowances there would be little danger of large fires, as no matter how bad a fire is, a few energetic men can stop it at a graded road. A grading machine can now be got for about $700.00, and those municipalities supplied with one have no disastrous fires in the townships where used."

> "Owing to the bad crops in Regina and Moose Jaw districts it was found necessary to give some Government assistance in the shape of public works; this money was wisely spent in grading roads, which, for some years, will keep down fires."

> "In connection with prairie fires, it is proper here to give credit to the settlers in the sparsely populated ranching districts; they turned out well, and worked well, and there is no comparison of their work and that of the residents in thickly settled districts, who generally look to the police for manual help, or hope for a rain to put them out."

> "Hundreds of settlers put up large stacks of hay and leave them on the prairie without any fire-break whatever, and in one district a police patrol *en route* to a mythical fire, which was positively stated to be devastating a settlement, passed 40 stacks in one morning, so unprotected; and many of the settlers have not even fire-breaks round their houses and buildings."

> "The reduction in the force now going on will render it impossible in future for the police to look after prairie fires in the well-settled districts. The majority of the fires last year was caused by carelessness, a considerable number by locomotives, although the railways are very careful as a rule, while several of the most disastrous were undoubtedly caused by lightning."

Supt. S. B. Steele, commanding MacLeod District, reported that the freighters, and travellers on the prairie generally, appeared to be more careful in extinguishing their camp fires than they were formerly. He described a number of fires in his district, one of which was almost 200 square miles in size. To give an idea of the kind of work necessary when a prairie fire broke out, he noted that one party left the barracks at 1 p.m., rode 30 miles to the fire, worked all night at it, and returned to barracks by noon the following day, having made a ride of 60 miles without rest.

Supt. A. B. Perry, superintendent at Regina, estimated one fire to have burned over 600 square miles, destroying timber as well as grass. His report on the causes of fires in his district is interesting. It was typical of early summaries that a large number of fires were of unknown cause.

Cause	**Number**
Ascertained persons	23
Railway locomotives	18
Lightning	3
Crossed boundary from Dakota	4
Crossed boundary from Manitoba	3
Burning coal mines	2
Unknown	32
Total	85

He felt that the presence of the North West Mounted Police made people exercise greater caution than they otherwise would. Commenting on the fines, he indicated that of 24 convictions the heaviest fine imposed was $ 12 and the average was $ 10. He said there may have been mitigating circumstances in all those cases, but it did appear to him that the penalities were not heavy enough to prove a deterrent.

Some apparently effective preventive action was described by J. Cotton of F Division in Prince Albert who stated:

> "I attribute the immunuity from fires in this district, to the fact, that as far as our resources allow us, constant patrols are kept on the roads, and the constables of these detachments lose no opportunity of warning the incoming settlers and emigrants of the consequences of allowing prairie fires to escape them."

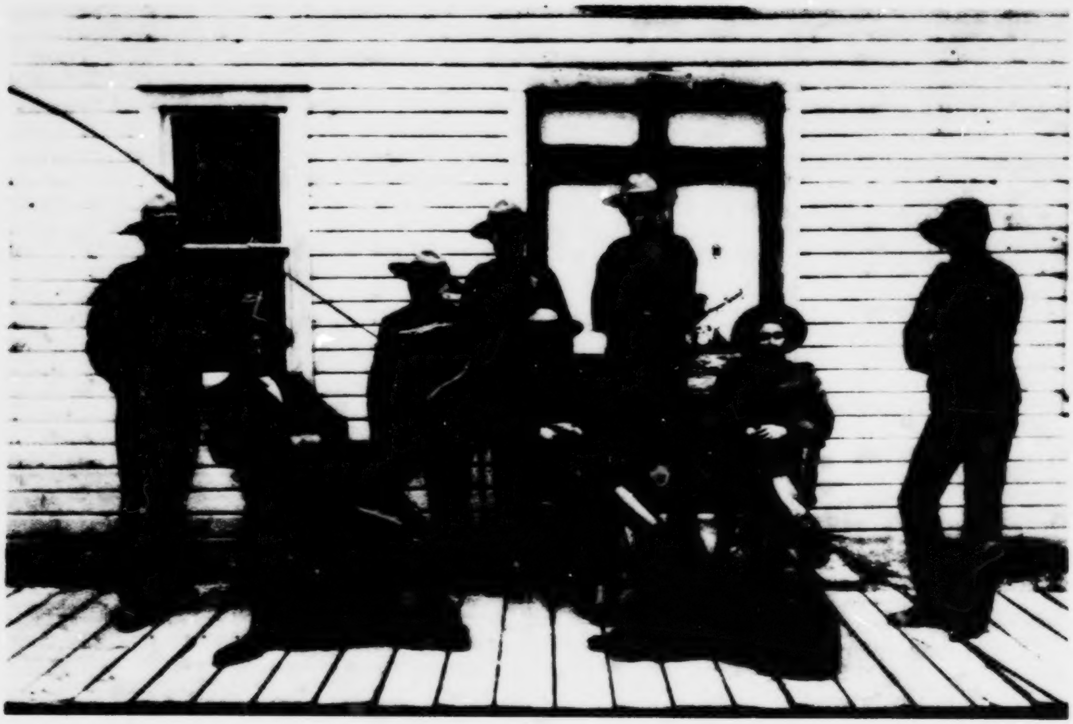


Figure 20. The N.W.M.P. were involved in prairie fire prevention and control - N.W.M.P. Edmonton detachment 1895. (Provincial Archives of Alberta B 1890)

However, comment from another part of the same district noted that some settlers were, in many cases, most careless about setting out fires. In the spring, grazing grounds were frequently burnt over with "criminal recklessness". The report stated that the settlers so doing, though they knew the law, realized how difficult it was to bring about a conviction. In one case described, a Justice of the Peace who was prompt enough to ask for police assistance, "virtually refused, at all events, did not take, an information offered by one of our men, who was then forced to travel a distance of seven miles to the nearest Justice of the Peace". It was also observed that not enough attention was given to fire guards, and burning around bluffs and swamps.

Robertson (1974) quoted an early-day settler, Z. F. Cushing, who actually was prepared for prairie fires:

> "One day late in March I saw black smoke in the west and I knew a fire was coming. It hit my fireguard about midnight and the guard held. It was a wonderful sight, a solid wall of fire as far as one could see. The whole country was a black waste, all except the quarter section of grass that I had saved. Looking at the quarter section of grassland from a distance, it resembled the size of a postage stamp."

Many others were not so fortunate and many accounts have been written about the rigors of fighting prairie fires to save lives and properties, and of the consequences of the fires. One such account was presented by Steen and Hendrickson (1944), writing about pioneer days in Bardo, Alberta, in the parklands southeast of Edmonton. Extracts from their accounts of prairie fires in 1895, 1896 and 1897 are included in the Appendix. Their account stated that the last bad fire occurred in the spring of 1906. After that new roads and newly broken land prevented fire from running wild and prairie fires in that district disappeared.

There appears to have been a rather fatalistic acceptance of prairie fires and, in spite of ordinances and some expressed concerns, effective mobilization of manpower was not yet possible except perhaps in ranching areas. The council of the N.W.T. passed minor revisions to the fire ordinance in 1894 which reflected this.

Meanwhile, the Interior Department reported that surveys for timber reserves continued. The Turtle Mountain and Moose Mountain surveys were completed and Riding Mountain studies were in process (Canada 1896a). The commissioner of Dominion lands (Canada 1897) stated that although final definite action had not yet been taken, the matter had not been lost sight of, and arrangements were being made for the setting apart of permanent timber reserves.

The agent of Dominion lands, R. A. Ruttan, reported that prairie and forest fires annually inflicted great damage to the settlers and to the valuable timber of the Edmonton district (Canada 1896a). He noted that several districts were paying systematic attention to the work of fire prevention, plowing fire breaks along the travelled roads. As the number of those roads increased, and the settlers realized the importance of fire precautions he felt they could expect an abatement of the fires. Two or three days plowing by every settler in a district would at that time have made individual possessions safe from fire, but he observed that it was difficult to convince the settlers of the urgency of taking such measures, considering the danger to communities. The North West Territories Council had assisted by enacting ordinances dealing with the matter. One of the ordinances to which he referred provided for the creation of fire districts to enable communities to take larger measures toward protection which were beyond the ability of individuals.

Nyland (1969), in his study of the Cooking Lake area, described fires in 1895, undoubtedly one of the ones to which Ruttan referred. His account portrays more graphically the impact of these fires.

> "The many fires lit by settlers during the second week of April, 1895, in and around the Beaver Hills were blown out of control by high winds, helped along by the setting of incendiary fires. The Edmonton Bulletin described it on May 9, 1895: 'The worst of the matter is that many settlers look upon this wholesale destruction of timber as something commendable and to the advantage of the country in making more land available for settlement. Even in those parts of the country that are open, only a very small percentage of the land is actually cultivated, so that there is no necessity for destroying the timber wholesale.'
>
> "So the fires raged through April and May, June and July, destroying nearly all timber stands and burning the soil so deeply that Ernest Hubbell wrote on July 27, 1895, 'I found the ground in many places burnt to a depth of several inches and it was with great difficulty a clear place, sufficiently large to pitch camp upon, could be found.' While engaged in his survey work, 'more than once were we compelled to cease work on account of the dense smoke from fires to the north west of us.'
>
> "The rains came full force in August and it was reported that they had put an end to this frightful holocaust. However, after the rainy period, the fires started again, and around October 10, the north end of the hills was ablaze again, burning dwellings and grainfields in the Fort Saskatchewan area. Once this fire built up such a large front that it jumped the North Saskatchewan River and continued north from there.

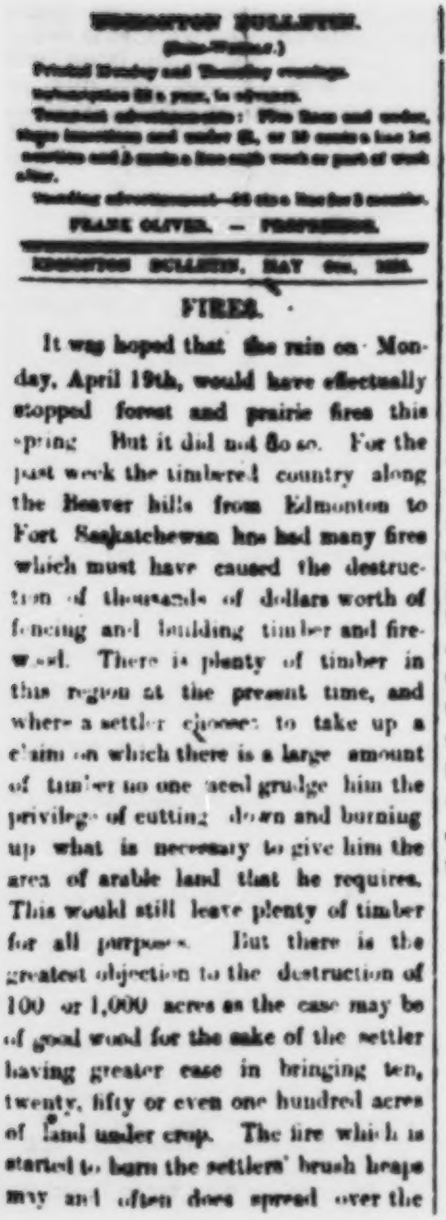
> "The result was utter desolation. The area which later became Elk Island National Park was burned so severely that only a few scattered trees in places sheltered by water, muskeg, or on north slopes of hills escaped. The large game population was destroyed. In fact, the entire area between Edmonton and Beaver Lake, Fort Saskatchewan and Cooking Lake was dead. Several buildings, fences and all wooden survey mounds had been destroyed and at least one life is reported to have been lost. Even the area east of Beaver Lake burned again, and on May 23, the school burned down.
>
> "This happened only two years after the Edmonton Bulletin reported that preservation of forests was utter nonsense because, 'In this part of the country where wood is everywhere abundant and particularly so throughout the greater part of the great area -- about six townships square -- known as the Beaver Hills, the same necessity for reserving the timber does not exist, and the policy of doing so becomes a burden and a drawback, instead of a benefit.' (February 9, 1893)".

When the Liberals came into office in 1896 reported Johnstone (1973), they appointed Clifford Sifton as minister of the Interior. Sifton was from Manitoba and had a background of knowledge of the West and its forests. His father had been a farmer and a lumberman, and Sifton had experience in both areas. His influence was soon to be felt.

William Pearce (Canada 1897) made the first reference to the economics of fire control in 1896 in his annual comments on prairie fires. He referred to a survey which was not yet available in which he intended to determine the probable loss during the past season by prairie fire. "The immediate object in view is this: assuming prairie fires could be largely or wholly prevented, to what extent could the cost of doing so be justified?" He anticipated that a simple comparison of cost and benefit would suffice to make his case. Unfortunately that was the only reference to the study. The subject was evidently as intractible then as now.

J. G. Jessup, agent of Dominion lands at Red Deer, made some suggestions for prevention of prairie fires (Canada 1897). He stated that Arbor Day might be safely abolished, "because no one plants trees in the North West, and the date is practically nugatory in its result". Instead he suggested that a "fire day" be set apart in which settlers in a district would be expected to turn out to plow fire breaks according to a plan. He envisaged this plowing to be in addition to the voluntary work which they would do along the boundary lines of their own homesteads. Arbor Day and the N.W.T. tree planting ordinance were evidently ineffectual.

Ruttan (Canada 1897) suggested a grid of fire breaks along road allowances as well, citing effective results where they had been tried. He referred to the gradually



EDMONTON BULLETIN.

[illegible]

FRANK OLIVER. — PROPRIETOR.

EDMONTON BULLETIN, MAY [illegible]

FIRES.

It was hoped that the rain on Monday, April 19th, would have effectually stopped forest and prairie fires this spring. But it did not do so. For the past week the timbered country along the Beaver hills from Edmonton to Fort Saskatchewan has had many fires which must have caused the destruction of thousands of dollars worth of fencing and building timber and firewood. There is plenty of timber in this region at the present time, and where a settler chooses to take up a claim on which there is a large amount of timber no one need grudge him the privilege of cutting down and burning up what is necessary to give him the area of arable land that he requires. This would still leave plenty of timber for all purposes. But there is the greatest objection to the destruction of 100 or 1,000 acres as the case may be of good wood for the sake of the settler having greater ease in bringing ten, twenty, fifty or even one hundred acres of land under crop. The fire which is started to burn the settlers' brush heaps may and often does spread over the

tecting that timber which was in his way then and perhaps now hinders a neighbor from settling on that piece of land. When the government makes a regulation which necessarily clashes with the wishes and interests of the settlers, special means should be provided to see that the results desired shall be attained. It is useless to protect the timber by keeping the settler off the timbered quarter section if the fire is allowed to sweep it away. What should be done in this country would be to allow any settler to take up any quarter section he pleased, so that he would only destroy what timber he required and would protect the rest; and to provide numerous and active police patrols during the seasons when fires will run, in all sections of the country in which fires are frequent and there is timber to be protected. In this prairie country of the Northwest the timber of the partly timbered areas has an especial value which makes it worthy of the most strenuous exertions of the government to secure its protection.

Figure 21. Editorial on forest fires in the Beaver Hills, Edmonton Bulletin May 9, 1895.

disappearing spruce forest, which was supposed at one time to have occupied the whole of the territory from Edmonton as far south as the Red Deer River, as evidence of the work of uncontrolled fires. The system he suggested, he felt, could be developed rapidly as soon as settlers became generally aware of its importance. He observed that the untaxable lands and school lands in the district made the burden of work done in fire districts fall very heavily on the resident settlers. He suggested that since all fire prevention done benefitted all lands equally, the government and the railway companies should volunteer the assistance which the municipalities were unable to demand as a right. He suggested also that government assistance be given in constructing roads into the forested areas to assist in the harvesting of timber, and to provide fire breaks.

The lieutenant-governor of the North West Territories commissioned a study of prairie fires which was presented in the same report (Canada 1897). It described the damage done, costs, sizes, and prosecution where it was possible to document them. The findings of the report agreed with the descriptions presented previously.

The report of the commissioner of the North West Mounted Police (Canada 1897b) indicated 17 more convictions in 1896 than in 1895 under the prairie fire ordinance. Carelessness was the cause of 43 of 58 fires in which the cause could be determined. The Regina District reported the ordinance was strictly enforced and that during the summer there were a number of convictions for "kindling" fires for the purpose of clearing land, without proper guards. The report stated that that particular clause of the ordinance, which was quite necessary, was apparently hated by the farmers generally, and enforcing it tended to make the police unpopular.

It was observed that one of the causes of fires spreading rapidly was the practice of "those thriftless farmers" who had not made fire guards, and then when danger threatened, set what they termed a back fire to guard themselves, pleading absolute necessity if prosecuted. The report stated that these fires added volume to the original fire and often did great damage and in many cases had been lighted through over-anxiety when not absolutely necessary and so all the pastures in the district, if nothing else, were burnt simply because some farmer had been "too lazy to guard his farm properly in the first place". Supt. A. H. Griesbach, commanding the Fort Saskatchewan Division, stated that in most instances the settlers themselves could be blamed for the spreading of the fires. He had found that the majority did not attempt to fight a fire until they were compelled to or were in imminent danger themselves. He suggested that all male persons within three miles of a fire become temporary fire guardians to enable a settler to compel unwilling neighbors to assist him. During the recent session of the North West Territories Council an amendment had been passed to compel 12 or more settlers in a township to form themselves into a fire district. He also suggested inauguration of a Fire Day similar to Arbor Day for the plowing and making of fire guards to lessen the danger from fire.

Correspondence between R.A. Ruttan, Dominion lands agent in Edmonton, and William Pearce, superintendent of mines in Calgary, in 1896 indicated that the problem of prairie fires was being given considerable thought and that an active search for workable solutions was being made. Pearce (1896a), evidently replying to suggestions from Ruttan, concluded rather pessimistically:

> ".....I think, prairie fires could be checked or kept within very reasonable bounds; but to do so, we would need a form of autocratic government, which we are not likely to have and given the present condition of affairs, I am very much afraid we will have to "grin and bear it"."

Ruttan (1896) replied to clarify the suggestions he had made. These included construction of 66-foot fire breaks along road allowances on the prairies, and federal government sharing of costs with the districts on the basis of 25-, 50-, or 100-percent shares. He also suggested using public funds to pay fire guardians. He wondered how to bring the suggestions to public attention - through newspaper discussion, through the agricultural societies, to the Legislative Assembly, or to Mr. Hamilton, N.W.T. commissioner, directly.

In response, on March 12, 1896, Pearce (1896b) enclosed a letter (not available) on the subject, which he had written eight years earlier revealing the persistence of his representations. He also referred to Department of the Interior annual reports which outlined many of his own ideas, and paid particular tribute to the cooperative organization in the Mormon settlement in southern Alberta. As he described it:

> "..... When a fire starts, the whole settlement is aroused.... A number have to furnish horses and ploughs, others barrels for water and arrangement for beating out fires and are at once followed by a number of the women and children (all of the same are at or on their way to the fire by this time) who bring along grub, blankets, tents, etc., so that they can stay for days if necessary."

Pearce reviewed a number of his other recommendations, most of which have been cited earlier in this paper. However, in conclusion he responded revealingly to Ruttan's comments about more government involvement.

> "As to the Dominion Government taking a hand in, does it never occur to you that the Government does too much or else not enough. Either the Government should go very much further and exercise more control over everything in all lines breeding of cattle and other stock, cultivating of land, dayrying, (sic) etc. or else back out and let the people run the show more than they do. As it is at present, the people shout one minute; "The Government must not interfere with our rights and liberties" and the next that the Government must act as a foster-mother and pay everything for them; but they reap the benefit. I do not know but that we will soon return to the old regime and have the Government do everything for us. Certainly the experiment of doing for ourselves, particularly in the matter of Municipal Government, has been an utter failure."

Pearce (Canada 1898), writing again on forest protection and forestry, stated that fire was a subject intimately connected with irrigation.

> "The disastrous floods which were experienced last June were chiefly if not wholly the outcome of the destruction of the forests along the foot-hills and eastern slopes of the Rocky Mountains, a destruction which has been almost incredible. Many believe that last season's experiences will be frequently repeated if steps are not taken to preserve the trees and brush at present growing on the areas mentioned, and also to stimulate reforesting as rapidly as possible for the balance....This subject is engrossing the attention of some of the wiser heads on this continent as well as Europe, but unfortunately for many countries, among which is Canada, it seems impossible to invest this subject with that interest to the masses which is necessary to enable the Government to take hold of it and carry it out with the energy that its in importance demands."

The agent of Dominion lands at Brandon reported a disastrous fire in 1897 which swept over the Turtle Mountain district, and suggested a re-survey of the proposed reserve to determine whether or not it should be maintained as reserve or thrown open to homesteading. The inspector of the Crown Timber Agency reported that fire guards were to be cut through the timber on the two forest reserves established at Turtle Mountain and Moose Mountain, but made no reference to the fire which had occurred.

E. F. Stephenson, the Crown timber agent in Winnipeg, confirmed that the forest rangers dealt largely with timber operations and were paid, at least in part, through commissions on dues collected by them. The need to check on trespasses and assess penalties created hard feelings with their neighbors. He was pleased that homestead inspectors were also being delegated to act in timber matters, substantially increasing the number of agents to share those responsibilities. On the subject of forest fires he commented that the provincial and territorial laws for the prevention of prairie and forest fires were excellent, and would be found adequate, were they enforced.

This view was substantiated by R. A. Ruttan, the Dominion lands agent in Edmonton, who informed the minister that loss of timber by fire during the previous year was minimized by the "energetic and efficient" enforcement of territorial fire ordinances, and advised that the settlers also appeared to be aware of the vital importance of opening up roads as one of the few effective means of fire prevention which could be applied. He did not say who was enforcing the fire ordinances.

A. O. Wheeler, in charge of irrigation surveys in Calgary, also felt that it was of vital interest that the remaining timber and the new growth on the east slopes watershed be preserved, not only to assist in retaining moisture, but also to increase the amount of precipitation on the watershed. He suggested a system of fire guardianship in which guardians would be placed at suitable points along the main trails to talk to travellers and to fight fires. He stressed the importance of prevention, citing the virtual impossibility of checking a fire once it had a good start.

In the meantime, the report of the lieutenant-governor of the North West Territories indicated that an additional 180 Statute Labour Districts were organized in 1897, with an additional 98 in the process of formation. Among projects performed by statute labor in 86 of these districts, 391 miles of roads were brushed and graded, and 330 miles of fire guards plowed. It appears that action on meeting the prairie fire problem was at last underway.

The following year, the deputy minister of the Interior (Canada 1899a) reported that he had visited the timber reserves at Turtle Mountain and Moose Mountain, commented on the fire guards which had been constructed, and that rangers had been appointed to protect the timber. He also indicated that the boundaries of a timber reserve at Cooking Lake near Edmonton had not been finally settled but it was hoped that during the coming summer permanent boundaries would be established and arrangements made to place the lands within the reserves under the jurisdiction of the Department of the Interior. He reported that permits would not be issued to cut timber for sale on Dominion lands along the eastern slopes of the Rocky Mountains and the foothill country adjacent to them south of the Bow River. The purpose, as far as possible, was to preserve the timber from being destroyed in order to secure a permanent supply of water for irrigation. He felt the continuation of the water supply was largely dependent on the preservation of the forest at present covering the watershed, and protection could only be secured by prohibiting the cutting for sale of the timber on Dominion lands and by endeavoring to prevent the spread of forest and prairie fires. The timber cutting prohibition would soon be removed, but a mature forest cover appeared to be the major goal of watershed protection at that time.

On July 1, 1898 the timber regulations under the Dominion Lands Act were revised, the new rules including two clauses related to fires (Leavitt 1915). One provided for the disposal of logging debris, the other required the licensee to defray one-half the cost of guarding berths from fire.

On Sept. 19, 1898, the North West Territories Council passed a revised ordinance for the prevention of prairie and forest fires. This legislation was more detailed and comprehensive than previous ordinances, prohibiting any person from fires "run at large", defining adequate fire guards, assigning responsibility to railways to control right-of-way burning, permitting land-clearing fires before the 7th day of May, enabling local improvement districts to burn under control, enabling the commissioner of Agriculture to appoint fire guardians, and detailing precautions for engines used for threshing. Copies of the original ordinance and of the 1899 consolidated and annotated version are included in the Appendix.

It is evident that pressures for action on the forest and prairie fire problems were mounting, both directly on the Department of the Interior, and indirectly on it through the North West Territories Council. The pace of settlement was increasing and the outlook for an acceleration in this was promising, so action to improve the timber supply through a combination of protection and planting appeared well warranted. A major step was taken with establishment of the Dominion Forestry Branch (Canada 1899b). However, Johnstone (1973) stated that in 1898 Clifford Sifton, minister of the Interior, included in his annual departmental estimates the modest sum of $ 1,000 to inaugurate the new agency and later stated "I had to talk half the afternoon to get it through" his Cabinet colleagues.

5.3 Advent of the Dominion Forestry Branch 1899-1905

The Dominion Forestry Branch was created in 1899, by order of Clifford Sifton, minister of the Interior. Elihu Stewart was appointed chief inspector of timber and forestry,in charge of the new branch. For the first time, some general policy objectives were stated by the minister when the budget item of $2,500 for the salary of the chief inspector was presented July 31, 1899 (Canada 1899b). Subsequent debate did not augur well for the first chief inspector, but his performance on the job was impressive. Extracts from the debates in the House of Commons are both illuminating and interesting.

In response to a question as to whether the office of chief inspector was a new one, Sifton replied (Canada 1899b):

> "Yes. I ask this item of $2,500 for the purpose of establishing the office of chief inspector of timber and forestry. I have had my attention directed to the subject a great deal by persons familiar with it, and also by the press. Ever since I took charge of the department I have felt that this branch of our work was greatly neglected, but we have had no officer who has the expert knowledge, both from a scientific and practical point of view, to give advice on the subject. The officers we had were Crown timber agents, ordinary bush rangers, or timber inspectors. I intend to utilize these officers' services in connection with the Indian Department and a general way. These are matters requiring such attention all the way from the Pacific Ocean to eastern Manitoba, and we have also large timber interests in the Indian reserves in the eastern provinces. I do not intend to have this appointee an officer of the Indian Department, but I intend to make use of his knowledge in connection with these matters of timber and forestry. It is my desire that this officer should give special attention to forest preservation and renewals. Particularly in the North-west, that subject has been badly neglected. I have attempted to carry out the policy which was outlined by the department before I took charge of it - but concerning which nothing had been done - in the way of making timber reserves, but I have been handicapped by the fact that I have not had an officer who could give his time and attention wholly to it."

The fact that forestry problems were not universally understood or supported in the House was brought out in comments and questions by a George E. Foster which followed the previous statement by the minister.

> "I can see that my honorable friend (Mr. Sifton) could do something in that way if he were going to undertake reforesting or the planting of trees where there have been no forests up to the present time. But, with reference to our timber-covered areas, I do not see what benefit an officer of this kind would be. We have large areas of country which are covered with timber, and we have certain rules under which these may be leased and the timber cut; and it is the business of the timber inspectors to see that those rules are properly carried out. These are officers who would look after the preservation of the forests. But I do not see that a forest expert would be of any particular use in that respect. If you want to preserve the forests, or to prevent the cutting of too much timber, or of timber below a certain size, and to preserve it from fires, you have simply to issue your instructions to those different officers, and they are intelligent enough, I suppose, to carry out those instructions. If

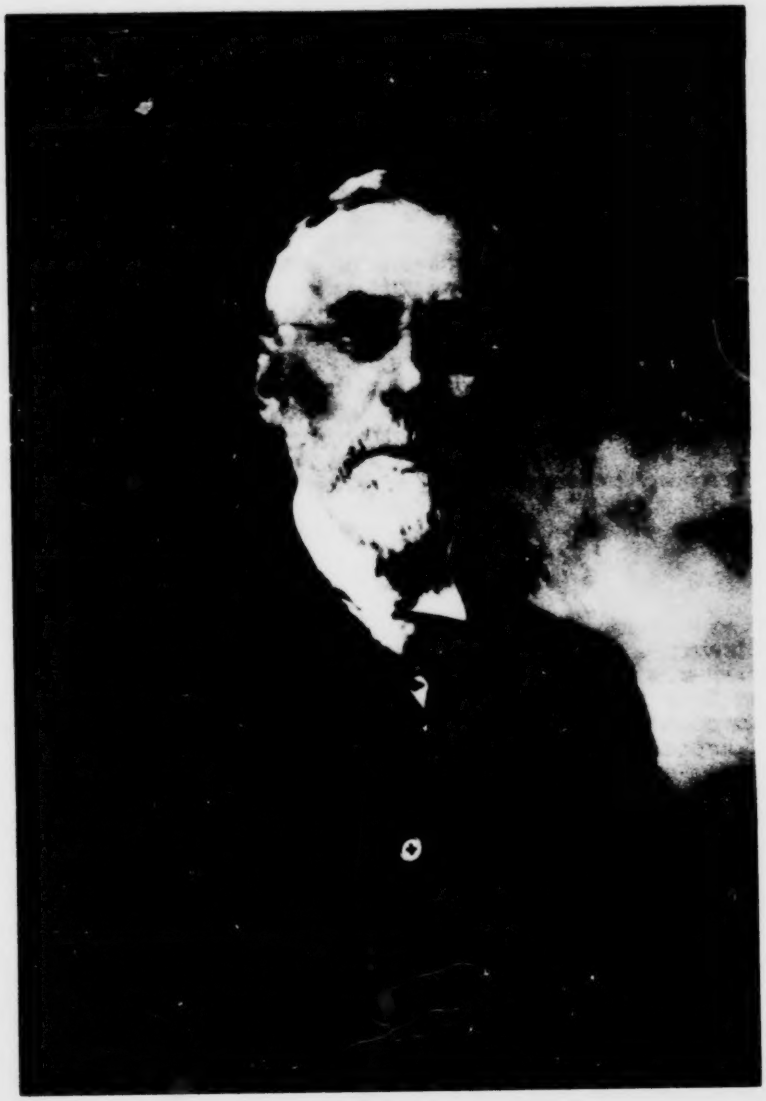


Figure 22. Elihu Stewart was appointed as chief inspector of timber of forestry for the Dominion of Canada in 1899. Photo taken October 1904. (Public Archives Canada PA 91095)

> you are going to enter upon the work of planting forests in the North-west, then expert testimony may be necessary. Is that what my hon. friend proposes to use this vote for, and has he decided on some plan?"

> "The Minister of the Interior (in reply). I have no plan yet, and this vote is for the purpose of arriving at a better plan, and for the purpose of deciding upon effective regulations. The inspectors we have now are purely local men; they are for the purpose of checking the operations of the men who have timber limits, but they have no special knowledge regarding the preservation of forests. In the North-west we have large areas of timber land, concerning which we have no report from any officer of the department. Petitions have been received from the settlers, asking us to take steps for the preservation of the forest from fires, and at present there are no proper means for doing so. I have done something in that direction on the report of Mr. Stephenson; but he is a very busy man, and has not full and accurate knowledge of the matter. I can assure hon. gentlemen that when this officer is appointed, he will be one of the busiest men in the department."

The interchange between Foster and Sifton continued, and Foster later asked "Who is it proposed to appoint as timber inspector"? The minister of the Interior replied: (Canada 1899b):

> "'Mr. Stewart, a Dominion land surveyor. He has been engaged for the department as surveyor in connection with the delimitation of the boundary between Ontario and Manitoba. He has been recommended to me by the members of the Ontario Forestry Commission as being a very competent man for that purpose.'

> "Mr. Foster. 'What experience has he had?'

> "The Minister of the Interior. 'He has been connected with timber matters for a great many years in the province of Ontario. I do not know where he resides.'

At this point a Mr. Clancy entered the discussion, and the exchange continued:

> "Mr. Clancy. 'Is that Mr. Elihu Stewart of Collingwood?'

> "The Minister of the Interior. 'Yes, that is the gentleman.'

> "Mr. Clancy. 'He is the gentleman who was one of the Liberal candidates at the general election in North Simcoe, and who was defeated?'

> "The Minister of the Interior. 'Yes, I am informed that this is the gentleman.'

> "Mr. Clancy. 'I can tell the hon. gentlemen that while I have nothing to say to as to his ability as a surveyor, he never had anything to do with timber.'

> "The Minister of the Interior. 'The hon. gentleman is entirely mistaken, if he says that I employed a gentleman to do work that he is not qualified to do.'
>
> "Mr. Clancy. 'I can tell the hon. gentlemen that Mr. Stewart has been feeding at the Ontario crib for a great many years. He has been making useless surveys of townships that no one is living in, and that nobody intends to live in. If these are his qualifications, I will admit that he is eminently fitted for this work. But he does not know anything about timber. While he may be a very good surveyor, he does not know anything of the duties of a timber inspector.'"

The minister of the Interior insisted that the "hon. gentleman" was entirely mistaken in his views. However, 20 columns in Hansard were devoted to questions and comments about Stewart and about the necessity for the position. The main thrust of the debate centred on Stewart, and toward the end of the debate the minister of Inland Revenue, Sir Henri Joly de Lotbiniere, stated: "There can be no question about the necessity of protecting the forest of the North-west." Foster replied that no such question had been raised.

Although Stewart's appointment smacked of the usual political patronage of the period, Johnstone (1973) was able to describe the greater substance of the man. Elihu Stewart was born on Nov. 17, 1844, at Collingwood, Ontario. He attended public and normal schools in Toronto. In 1896, at the age of 52, he was defeated as Liberal candidate in the North Simcoe riding, but was elected mayor of Collingwood by acclamation the same year. He qualified as both a provincial and a Dominion land surveyor in 1872 and enjoyed a long and successful career as a land surveyor. In 1899, at the age of 55,

> ".... he accomplished his most important work in forestry as Superintendent of Forestry for the federal government when he organized the Canadian Forestry Service and was a key figure in the organization of the Canadian Forestry Association. He enjoyed the confidence of Sir Wilfred Laurier and was frequently consulted by the Prime Minister on forestry matters. When he left the Forestry Service he became managing director of a large Montreal lumber firm specializing in the sale of British Columbia timber. He then became one of the original owners and directors of the Spruce Falls Pulp and Paper Company at Kapuskasing, Ont. He was one of the founders of, and a frequent contributor to, the Canadian Magazine and served as a director of several British Columbia timber companies.
>
> "The West was not new to Stewart when he came to the Department of the Interior in 1899. In 1875 he was engaged on surveys for the Dominion government near Battleford, making the trip from Fort Garry by Indian pony and ox teams. So, when he offered his first report, which appeared in the Annual Report of the Department for 1899, he already had a physical appreciation of his subject."

That Elihu Stewart took his work seriously and approached it with vigor is brought out in his first and second annual reports of the chief inspector of timber and forestry for 1899 and 1900 (Canada 1900a and 1901a).

Stewart reviewed the forest resources at length, but reflected a note of discouragement in connection with fires:

> "While the burden of every report, where reference is made to our forests, is their rapid destruction by fire, so far the efforts to prevent these catastrophes have not approached within measurable distance of what might have been done, and it is not only useless but unprofitable to attempt to calculate the loss sustained except as an incentive to do all that is possible, to prevent as far as can be done, further destruction from the same cause."

Stewart recognized the role and contribution of the N.W.M.P. in fire law enforcement, but also saw the inadequacies in view of their limited numbers and the vast extent of the country. He reported that it would be necessary to provide additional assistance to control fires.

The tone of the second report (Canada 1901a) was more positive, reflecting some changes which he had been able to effect. As Johnstone (1933) commented, Stewart's report was "warmly applauded" by the deputy minister, James A. Smart. In his remarks about tree planting and forestry, Smart stated:

> "The report of Mr. E. Stewart, Chief Inspector of Timber and Forestry..... will, no doubt be read with special interest, as the importance of the subject with which he deals is fortunately becoming more felt. This being evidenced by the renewed efforts put forward by the provinces to arouse the agriculturist and the lumberman to a keener sense of their duty in this respect, and by the increased attention which the matter would appear to command amongst the people of the west generally....."

> "It may be noted that this branch of the department has now been established on a practical working basis, and considering the extensive scope of its operations and the valuable service which it be called upon to render in the way of propagating the science of tree planting and forest preservation, it will not be many years before it becomes one of the most important branches of the department."

On the subject of forest protection, the deputy minister continued:

> "The grounds set forth by the Chief Inspector on which he urges the immediate adoption of effective and stringent measures for the protection of timber against fire within the permanent reserves, will at once appeal as being very well taken, and this would apply with more particular force to the reserves in Manitoba, where some of the most important water courses take their source. A number of forest rangers and fire guardians, acting under the immediate control of the Chief Inspector, have already been placed in charge of the different reserves, and no doubt by careful supervision on their part, the

danger of forest fires, which have been so prevalent in the past, will be greatly minimized."

The deputy minister also praised Stewart's initiative in establishing the Canadian Forestry Association. This action was described more fully in the report for the next year.

In his second report for the forestry branch (Canada 1901a) Stewart described how he had acted on the recommendations made for the appointment of forest fire rangers to guard certain of the timber areas which were most exposed to danger from forest fires, and how he had spent most of his time travelling through the wooded areas of Manitoba, the North West Territories and the Railway Belt in British Columbia. Steps were then being taken by which fire rangers would be employed, generally under the supervision of the Crown timber agents for the districts "at such times and places as they consider their services necessary". It is evident that this first fire control service was based primarily on casual hire.

He paid tribute to the North West Mounted Police who had always regarded fire protection as part of their work. He pointed out that their duties were so varied and extended over such a vast extent of country that it was impossible for them to adequately guard both timber districts and the prairie during the dry months of the year. During his tour of inspection in 1900 he reached agreement with N.W.M.P. officers in many districts as to what part would be looked after by their men and the parts for which the forestry branch would hire other assistance. They agreed that copies of the fire ordinance and posters warning the public that the provisions of the ordinance would be vigorously enforced would be sent for use by the N.W.M.P.

In discussing the major work of his branch, Stewart pointed out that there were two great divisions to it, which both deserved careful attention: the protection and management of the present forested areas; and the encouragement of tree planting on the plains of Manitoba and the North West Territories.

Stewart attempted to demonstrate in his discussion that management of the forest was a legitimate function of government. He advanced two major reasons why forests belonged peculiarly to the state. The first was "on account of the communal interest in the forestry of a country being so large as compared with the individual interest". He pointed out that the value of the forests went beyond the commercial value of the wood, and drew an analogy to the value of water which was used as a public resource for such uses as drinking, generation of water power, and means of transportation. The second reason put forward related to the length of time required for trees to attain maturity, which he felt left little incentive to the average individual looking only to his own immediate interests to engage in an enterprise such as tree planting. He argued that for the nation the case was very different since the nation would survive to well past the harvesting age of timber whereas the individual would not. He concluded:

> "Therefore, if it can be shown that public money can be profitably employed in forestry matters, whether in arresting the present destructive agencies, such as forest fires, &c., or in assisting nature in the way of reproduction, we are working on lines well within the limits of state authority; and not only this, but in a field where the state alone can best undertake the work. Such being the case, and regarding the necessity of forests to the welfare of the country as previously pointed out not only for the present but for the future generations, it may safely be asserted that it is the duty of the government to expend such of the public funds as may be necessary for such service."

Stewart also described the forest reserves which had already been established. Those in Alberta included the Foot Hills Reserve embracing all the territory from the summit of the Rocky Mountains to the prairie and extending from the international boundary north to the Bow River. The importance of this reserve was largely related to the developing irrigation projects and the perception that it was "absolutely necessary that the natural reservoir be kept intact, so as to retain throughout the summer an adequate supply". Two forest fire rangers had been employed during the latter part of that season within the Foot Hills Reserve. Other districts in Alberta set aside as timber reserves included the Cooking Lake Reserve southeast of Edmonton containing over 109,000 acres; the Forest Park Reserve near the international boundary in southwestern Alberta containing over 34,000 acres; the Louise Lake Park Reserve southeast of Laggan Station in the Rocky Mountains, and Sand Lake Park Reserve, also in southwestern Alberta. He referred to the Rocky Mountains Park and the fine young growth of trees springing up over a large part of it, replacing the old forest that had been destroyed by fire. He added the comment:

> "It is unnecessary to say that if this locality should again be visited by one of those fires such as formerly swept over it, it would simply ruin the park, till another growth could take its place."

With respect to tree planting on the prairies, he referred to the generally understood benefits: ameliorating the climate, breaking the winds, improving soil moisture,

Figure 23. Forest ranger in typical lodgepole pine regeneration following a burn in the Rocky Mountains. (Alberta ENR)

and providing a wood supply.

Stewart's initiative in creating the Canadian Forestry Association is worth citing. He wrote (Canada 1901a):

> "Recognizing the importance of having the strength of public opinion behind the efforts that were being made to inaugurate and carry out a forestry policy suited to the various conditions of the country, and believing that the idea would meet with favour by those who had given the greatest attention to the subject, in January last I took the liberty of inviting a number of gentlemen to meet at my office for the purpose of considering the matter of forming a Forestry Association. This meeting was well attended by those qualified to express an intelligent opinion on the subject, and the result of their deliberations was the unanimous adoption of a resolution that steps be taken to form a Canadian Forestry Association, and that a meeting be called during the month of February following for the purpose. A committee was appointed to carry out the proposition, and on the 8th of March a meeting was held in the railway committee room of the House of Commons, when a constitution and by-laws were adopted, officers appointed and several interesting papers on the subject of forestry read."

Smart pointed out also that the association had no official connection with any branch of the government service, and stated that he believed "the deliberations and advice of such a body of men will be of great assistance to this branch in its efforts to inaugurate and carry out a judicious system of forestry in Canada....." What he did not mention was that Stewart had been elected secretary, and R.H. Campbell, also of the Department of the Interior, elected treasurer.

The Crown timber agents still remained in Dominion lands, probably since they were concerned primarily with collecting revenue from timber sales. However, E. F. Stephenson, the timber agent in Winnipeg, commented:

> "The steps taken by the Government in appointing a large force of fire guardians to guard the timber interests of the country, are highly appreciated by the people; and it is expected that, through their efforts, fires will be of less frequent occurrence in the future."

In a House of Commons debate on a matter of financial supply (Canada 1900b), the minister of the Interior, Clifford Sifton, was asked what was being done under an item respecting protection of timber lands and tree culture. He replied that the officer appointed (Stewart) had been actively engaged in formulating plans for carrying out the work. He mentioned the Canadian Forestry Association as a positive step and added that it had for its object not only encouraging forestry work in Manitoba and the North West Territories, but also encouraging the movement for the protection and care of forests in Canada generally. As Sifton stated (Canada 1900b):

> ".......it is our intention under this vote to appoint men whose business will be to act as fire guardians and forest rangers and also to assist and encourage the planting of trees in Manitoba and the North-west Territories. The number we expect to appoint will be in the neighbourhood of seven or eight, for the purpose of getting the work started."

Stewart (Canada 1901a) also outlined the necessity for exploration work in the unsurveyed portions of the country to try to determine the physical character of the country and the extent of its resources. He particularly referred to the lack of knowledge of the extent of timber resources, agricultural or mineral wealth.

By federal order-in-council of April 9, 1901, the timber regulations were amended to provide that all new licences and permits would contain a clause to the effect that one half the cost of fire-guarding the timber on Dominion lands would be defrayed by the holders of the timber berths, the Crown defraying the other half. The deputy minister, James A. Smart, was concerned about high fire-guarding costs (Canada 1902a). He felt that since those engaged in the lumber industry should be personally interested in the preservation of the timber areas under licence to them, they should fairly be called upon to contribute their share of the cost.

The deputy minister also referred to the report of the superintendent of forestry that owing to the efficient work performed by the forest rangers acting under his instruction, millions of feet of merchantable timber had been saved from destruction by impending fires that year, adding that there could be no ground for questioning the wisdom of the policy inaugurated by the department. In his general review of forestry matters the deputy minister again drew analogies to the countries of Europe (Canada 1902a):

> "In view of the importance of the interests attached to the good administration of the forest domain, it is not to be wondered at that from time immemorial in the chief countries of Europe, notably Germany, France, Belgium, Spain, Italy, Russia, Norway and Sweden, systems of sylviculture and stringent laws have been in force for the improvement of forests and their preservation against depredation and abuse."

He felt that similar results could be obtained in the North West Territories by methods suitable to the climate.

The question of education was raised for the first time in the annual reports of the Department of the Interior. Smart referred to the 1885 committee appointed by the House of Commons in England to consider whether, by the establishment of a forest school, or otherwise, the woodlands of England, Wales, Scotland and Ireland could be rendered more remunerative. The commitee's report was quoted at length, portions emphasizing the desirability of the formation of a forest school, and probably at more than one centre. He added a concluding comment:

> "In a country so extensively wooded as was Canada at the time of its first occupation, it will be readily understood why such little notice has so far been taken of the forests, except as to clearing the land for settlement. The ruthless destruction of some of the most valuable timber areas, coupled with the increased demand for timber consequent upon the development of the country makes it quite clear to-day, however, that any measures taken by the government towards the reservation and improvement of our woodlands, which are by far the most important natural asset of Canada, should commend themselves to all who take any interest in its welfare."

He reinforced this sentiment in his review of the Canadian Forestry Association. In it he quoted in full the conclusions of a report of the board of directors, a portion of which is worth repeating:

> "While all the steps in the development of the forestry policy of Canada may not yet be perfectly clear, the necessity for, and the method of the preservation of the present timber supply are sufficiently evident to justify your board in urging that the influence of the association should be used to secure that the Forest Fire Acts of all the provinces should be made as effective as possible, both by proper provisions and a wide-spread advertisement of them. The extension of the fire ranging system should also be urged when the necessities of the case will permit."

The report on the CFA also recognized the importance of having a strong public sentiment behind any governmental action, and suggested holding a number of meetings in the large centres of population to bring the forestry problem to public attention. That suggestion may have helped to set the stage for the national forestry convention held five years later in 1906. Also significant was a quotation from remarks made by Dr. C. A. Schenck, Principal of the School of Forestry at Biltmore, North Carolina, at their most recent CFA meeting. Dr. Schenck included these remarks:

> "I think in the matter of forest fires we ought to move. The laws must be enforced. It can be done. It is done abroad. It is done in India. I think it can be done here. Whether at an expense of $6,000 or $60,000 you must guard all these miles of forest from fire. Though you cannot adopt European systems without money and plenty of it, fires can be prevented. We should impress that on the minds of our people and legislators constantly. It is a sure investment, sure to pay. Trees are one of the best investments that the government of any people can make.
>
> "In Canada, if the population continues to increase, if the facilities of transportation continue to be developed, the price of pine stumpage, 80 years

> hence, might be twenty dollars per 1,000 feet B.M., - the price now prevailing in Germany and France. If such are the prospects, Canada will be the richest country on earth before the dawn of the next century, provided that she continues to conservatively manage her forest resources; again, if such are the possibilities, we should at once proceed to reforest every acre of ground unfit for the plough but fit for timber production.
>
> "If such are the chances, every sapling in the forest should be as carefully protected from fire as it were a paper dollar bill."

The Crown timber agent at Winnipeg commented that climatic conditions prevented the origin and spread of fires during 1901, but struck an optimistic note:

> "I am sanguine that hereafter, in seasons when climatic conditions may favour the origin and spread of fires, the guardian service inaugurated by the Forestry branch of the department may do effective preventive work."

He also commented that the opening of roads and drains would be expected to promote the efforts of the rangers in applying the necessary "preventives (sic) and suppressive measures", presumably through their effect as fuel-breaks.

In the House of Commons on March 11, 1901, (Canada 1901b) Clifford Sifton, the minister of the Interior, was asked how many forest rangers were in the employ of the Dominion government, how many forest fire rangers were employed, their duties, locations, and salaries. He replied that there were 11 homestead inspectors who acted as forest rangers when required. In addition were three others, two of whom were in charge of forest reserves and one of whom worked on the timber north of the Canadian Pacific Railway. He continued:

> "The duties of forest rangers are principally to prevent illegal cutting or destruction of timber. Their services are also utilized in collecting dues on timber cut illegally, and investigating and reporting upon cases of reported illegal cutting of timber."
>
> "There are no forest fire rangers employed by the Dominion Government permanently, but the above officials assist in performing the duty, and men are employed when it is felt necessary to protect timber from fire. They are located at the most convenient point, and their duties are generally to protect timber by taking every necessary precaution to that end. They also distribute copies of the law respecting prairie and forest fires. They are paid, when so employed, at the rate of $3 per day for man and horse, including all their expenses."

The annual reports of the Department of the Interior during this period are characterized by philosophical dissertations, detailed explanations and rationalizations, along with recitations of events. The reason for these become more clearly understood on review of the debates in the House of Commons. The questions and discussions reflected an ignorance among the members of the resources and problems of the North West Territories, concern over government expenditures, concern over proliferation of staff, questions about the propriety of involvement of government in forestry, along with scoring of political points. The annual report entries undoubtedly reflect repeated attempts by the minister and his staff to explain the reasons for actions taken, to outline the nature of the problems and to advocate programs.

In response to a budget supply item for "Protection of timber lands in Manitoba and the North-west Territories and tree culture in the North-west Territories, $15,000", wide-ranging debate was recorded in 29 columns of Hansard on April 9, 1901. The minister of the Interior presented a defence of his program (Canada 1901b):

> "I have for a number of years believed that one of the most important needs in Manitoba and the North-west Territories was a plan that would prevent the destruction of timber lands by fire, and coupled with that some means of educating the farmers in an intelligent system of tree planting."

The minister also commented that he intended to appoint two assistants responsible for the tree planting program, one of whom, Norman M. Ross, was already in place. He said Ross had made a special study of forestry, with courses at Guelph Agricultural College, studied under Dr. Schenck in North Carolina, and then subsequently spent some time in Europe. The minister said he intended, if possible, to procure two forestry experts from Germany or Belgium. The appointment of Elihu Stewart came in for additional comments, but the minister again repeated that there was no officer of the department previously "to give special attention to the question of protection against forest fires, which were a source of great embarrassment before that to the department". The minister had to admit ignorance as to the specific locations of the major forest resources of the country. The usefulness of fire guards was also raised and successfully defended, and distinctions made between prairie and forest fires. A concluding remark by a Mr. Clancy is revealing of a fundamental concern, one which remains today. Clancy stated:

> "......But see what this multiplication of officials leads to. The country to be covered by this service is a vast country. The hon. minister, in his supplementary estimates, is asking for more money for the outside service in connection with Dominion lands. I do not discuss that now, but I merely refer to the fact that this is not all the money that will be required. It only shows that

> when you multiply officials you are in the hands of those officials, you lose control of your expenditures and must increase them to serve these officials rather than to serve the interests of the country."

The increasing participation of the North West Mounted Police with prairie fires, the evolving municipal government with its statute fire and labor districts, the construction of roads and increase of settlement combined gradually to reduce the extent of prairie fires over the next decade. Part of the problem was that the resources of the North West Mounted Police were also stretched very thinly. A. Bowen Perry, commissioner, outlined in his report to the prime minister in January 1902 (Canada 1902b) the problem of trying to do more with fewer men dispersed through increased detachments:

> "The population of the Territories has doubled in ten years and the strength of the force has been reduced by one-half. Our detachments have increased from 49 to 79."
>
> "There are 150 officers and men constantly employed on detached duty but the extent of the country is so great that the detachments which do not consist of more than one or two men, are at an average distance of 40 miles apart. Taking the 'organized' portion of the Territories only, there is an average of one constable to every 500 square miles and to 350 of the population."

Reports of commanding officers made continued references to the extent of prairie fires. The remedies, in their view, lay in fire-guarding of the railways, fire-guarding of homesites and haystacks, continued warning of the public, vigorous prosecutions, and fines large enough to act as deterrents.

The size of the Department of the Interior is worth mentioning for perspective with respect to the attention given to forestry. The department was large, with wide-ranging responsibilities. It included branches concerned with Dominion lands, immigration, Dominion lands surveys, North-west registrar, Rocky Mountains Park, mines and irrigation, the Yukon Territory, Keewatin, and forestry. That forestry was granted as much support as it was given within the climate of evident political opposition indicates that the government felt the issue was important.

In 1902 the deputy minister of Interior (Canada 1903a) reviewed the work of the department and made reference to a falling off of financial receipts. However, he explained that the Department of the Interior was not a "revenue department" and stated that the success of the general results of the work of the different branches could not be measured by the amount of revenue collected.

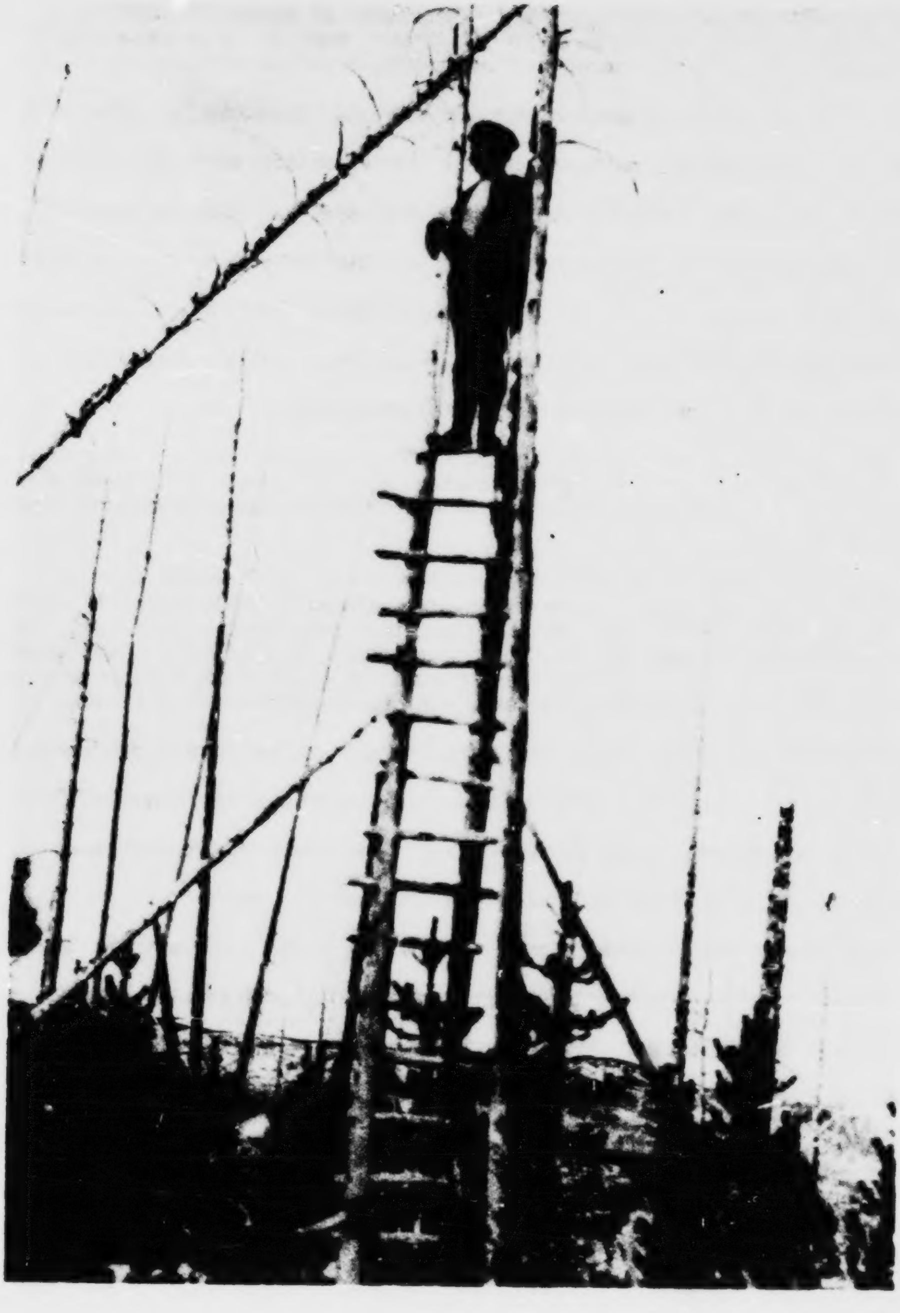


Figure 24. Meagre budgets led to improvization - fire ranger on temporary lookout, Brazeau Forest. (Alberta ENR)

> "The main object in view in framing the policy of the department had been the settlement of the country with a proper class of people and that this object has been fully attained is clearly demonstrated by the fact that the increased settlement in the west has been such within the last two years that the demand for holdings has caused the price of land and scrip to more than double in value. The agricultural capabilities of Manitoba and the North West Territories are now questioned by no one."

In his review of forestry, the deputy minister referred back to 1875 when Hon. David Laird, then minister of the Interior, ordered an enquiry into the subject of forestry. Ten years later, in 1884, another attempt had been made to deal with the subject through the commission of J. H. Morgan. He commented, however, that the second step was, like the first, without any practical results and it was not until 15 years later that the matter was again taken up. He felt there was reason to believe now the importance of this subject could no longer be ignored, as the forestry branch was in full operation and its work meeting with even more success than was at first anticipated. In his own report on the forestry branch, Elihu Stewart included a long discussion about Canada's future as the world's future supplier of timber, and the necessity of forest growth to preserve a water supply. It is evident that a great deal of promotional work was being done to advance the cause of forestry.

More specifically, Stewart (Canada 1903a) stated that forest fire rangers were employed during the dry weather, working under the supervision of the Crown timber agents or other officers of the government, who instructed them when they were to begin and when to stop work during the fire season. The Crown timber agent also designated the districts to be patrolled by each ranger and directed their work generally. The cost of the service was divided proportionally between the government and the owners of timber limits. Emphasis was given to posting of notices warning the public against the careless use of fire during dry seasons. Recognition was given to the Canadian Pacific and Canadian Northern Railway Companies and the Hudson's Bay Company for their cooperation in posting notices. The general prevention-oriented nature of the fire-ranging job was described by Johnstone (1973):

> "..... Forest fire rangers were selected from men residing in or near the district where they were to be employed. They were under the direction of a supervising officer, who was usually the Crown timber agent, a regular forest ranger or a inspector for the district. When this officer felt that fire rangers were needed, he notified them, provided them with copies of the Fire Act, a copy of general instructions defining their duties, and a supply of notices for posting up and distributing to warn the public against the careless use of fire.

> The fire rangers provided their own horses when these were required and in such cases they received a wage of $3 a day, which covered both the ranger and the horse. When the supervising officer felt the fire danger was over, he recalled the ranger and instructed him to make out his account, which the supervising officer certified and then forwarded to the Department together with a daily diary showing how the fire ranger had been employed. Thus the fire ranger was employed only when there was a fire danger; in wet seasons he was often not employed at all."

Reports of field agents gave credit to the fire rangers, who were on constant duty patrolling their districts, posting notices, and assisting to extinguish fires. However, a note of concern was expressed by Thomas Young of the Riding Mountain Timber Reserve who stated (Canada 1903a):

> "The forest fire rangers complained that their remuneration is not sufficient for their labours, and I have experienced a difficulty in retaining good men from season to season."

Railway fires were a continuing concern. On July 9, 1903, the minister of railways and canals proposed in the House of Commons (Canada 1903b) that the following clauses be added to the Railways Act:

> "The company shall at all times maintain and keep its right of way free and clear of any inflammable matter."

> "Subsection 2. Whenever any fire starts upon the right of way of the company and spreads to the adjoining property, or whenever a fire is started in any property adjoining the right of way or the property of the company, by a spark from a locomotive; in any action for damages resulting from any such fire the burden of proof that any such fire was not caused by the negligence of the company, shall be upon the company."

Subsequent debate on this proposal covered 24 columns in Hansard and the matter was left largely unresolved. The minister was to continue study and to refer back to the House.

In the same session of the House, the budget item relating to protection of timber lands was again questioned. On July 16, 1903 (Canada 1903b), the minister of the Interior was asked to explain why the vote was increased by $10,000 to $25,000. In reply the minister referred to the report of the superintendent of forestry and made some comments about tree planting activities. He continued:

> "...... the other division of the work consists in taking such steps as may be found practicable for the purpose of preventing the originating and spread of fires. I may say that this is a class of work which might be with great advantage considerably extended and the reason why it is not considerably extended is due to the fact that we do not feel like asking for a larger appropriation. Hon.

> gentlemen will see that $10,000 out of the $25,000 we are asking for is for the payment of fire rangers in different sections of the country. I am told that last year the work of the fire rangers appointed by this branch of the service saved very large quantities of timber which unquestionably would otherwise have been destroyed, and I fancy there is no vote in connection with the service of the Department of the Interior which more fully justifies itself in the saving of property which forms part of the public domain."

An interesting dissenting view was later expressed by a George E. Hughes who said:

> "........ In the northern part of these territories it would be a great blessing if a good fire would sweep over the country and burn the underbrush which varies in size in density and which has to be cleared by the settlers with even greater labour than confronted the earlier pioneers of Ontario in clearing the forests...."

Hughes suggested that the minister might look into relaxing the regulations. Frank Oliver, M.P. from Edmonton, stated that he was somewhat astonished to hear Hughes asking that the regulations respecting prairie fires in northern Alberta should be relaxed. Hughes clarified that he meant wood fires not prairie fires, whereupon Oliver described the problems of both and concluded by saying:

> "...... but I cannot allow the suggestion to pass without a most emphatic protest and to say to the minister as representing that part of the country, that I would most strongly urge not only that the present restrictions be maintained - of course he has no control over them - but that the present means of maintaining these restrictions over which he has control be rather improved and enlarged than otherwise."

Hughes later went on to clarify that what he had in mind was not timberland but land covered with scrub, stating his belief in preserving the timberland at every cost.

In spite of concerns expressed about proliferation of manpower, resources were very thinly spread. Stewart (Canada 1904a) reported that there were 22 forest fire rangers regularly employed during the 1903 season, of which eight were in the Railway Belt in British Columbia. Only four were in Alberta - two in western Alberta under D. G. McPhail, and two in the Edmonton district under forest ranger John A.C. Cameron. In addition to these, a number of men had been appointed at different times for a few days when it was necessary to engage them in fighting fires. Some of the early facilities were rather primitive (Figure 25).

Stewart reiterated that the work of the fire ranger lay largely in preventing the starting of fires, and observed that the results for that season were most encouraging. He based the assessment of results on comparison of fire activity in the guarded and

Figure 25. Ranger's cabin showing fire prevention notices, Dog River, Alberta. (Public Archives Canada PA 40629)

unguarded districts during the same period.

Stewart reviewed the value and extent of the forest resources on Dominion lands, as far as was known. He concluded:

> "When we consider all these facts, it must be apparent that from a financial standpoint alone the liberal expenditure of public money in guarding these forests from destruction is fully warranted. It is unnecessary to refer to the incalculable loss which Canada has already sustained by forest fires, while the excellent results that have followed the adoption of the fire ranging system wherever it has been in force are universally admitted."

An interesting comment on the subject of fire ecology was made by Howard Douglas, superintendent of Rocky Mountains Park (Canada 1904a). Following a review of the fire problems experienced during the season he stated in retrospect, a little simplistically:

> "....... From personal observation I have noticed that in the course of a few years after a forest fire has swept along its destructive course the work of regeneration begins, and a new crop of tree appears. Curiously enough, however, a new kind of tree replaces the old, almost invariably. Out on the prairie the poplar usually follows the coniferous trees, but in the mountains, where the poplar cannot grow in high altitudes, the pines follow after spruce and balsam, or vice versa. This is probably due to the fact that the soil becomes somewhat exhausted in the particular element needed by one species of tree, so that when they are removed by an unnatural cause new kinds have the advantage in the renewed struggle for existence. Thus we have a natural rotation of crops illustrated in the replacement of trees."

In spite of these remarks, Douglas left no doubt as to his view about the undesirability of fire, the "terrible disaster to the park which an extensive fire might produce", and referred to "recurrence of the fires that so devastated the park in its early history". His view that removal of trees by fire was an "unnatural cause" is also revealing of prevalent attitudes toward fire as universally bad.

During this time the occurrence of prairie fires remained a continuing problem, as outlined in the reports of the North West Mounted Police. The prairie fire ordinance was amended by the Council of the North West Territories in 1903 to assign more specific responsibility to operators of engines, whether stationary or locomotive, and laid down specifications for fireguards along railways. In the following year the ordinance was amended again to specify "threshing" engines as a fire source. A copy of these amendments is included in the Appendix. The 1903 amendment was later challenged by the Canadian Pacific Railway. The Supreme Court of Canada ruled in 1907 that the N.W.T. ordinance was *ultra vires* in so far as it related to the prevention of fires caused by sparks from locomotives on railways subject to the Dominion Railway Act (Palmer 1960). It is interesting that an earlier appeal by the C.P.R. on a conviction in 1904 was struck down in 1905 (Beck 1912). That appeal was based on two arguments: that there was no evidence to support the conviction, and that the prairie fire ordinance in so far as it purported to bind the C.P.R. was *ultra vires*. The case summary presented both the case and the ruling:

> "The fact that shortly after the passing of a locomotive a fire is seen near the railway track, where none existed before, is *prima facie* evidence that the fire originated from sparks from the locomotive."

> "The provisions of the Prairie Fires Ordinance requiring locomotives to be equipped with certain appliances and in casting on a defendant the onus of proof in a criminal charge relating thereto, are binding on a railway company deriving its powers from the Parliament of Canada, but operating lines of railway in the North West Territories."

The judgement explained that the ordinance in the last case only affected the procedure and rules of evidence, and did not compel the railway to act in a manner different than provided for under the General Railway Act.

The N.W.M.P. superintendent at Calgary discussed the railway problem in his report of Nov. 30, 1903 (Canada 1904b). After commenting that the railways were the origin of the large majority of fires, he explained:

> ".....although the ordinance provides that the engineer of the locomotive is liable if the engine is not furnished with proper appliances for arresting sparks, and the fire-guard is not burnt, yet it is difficult to get the necessary evidence that a spark from a certain engine caused the trouble.... In all cases against engineers it will generally turn out that the engine itself fulfils all the requirements, and that the engineer is only liable on account of the fire-guarding of the line not being carried out. The ordinance makes him liable for something over which he, personally, has absolutely no control."

Superintendent Sanders concluded his review of prairie fires by observing:

> "Many remedies are suggested for the prevention of prairie fires, but to my mind the continued warning of the public, and the careful guarding of the railways are the main things to be done. The ordinary fire-guard you see plowed about the country in different directions are ineffective against a big fire and a heavy wind, they are generally used by the settlers as a good point from which to start back-fires, reckless of the consequence to their neighbours, who often find themselves from this cause approached by fire from two directions at once."

The uphill struggle to establish the role of government in forestry matters was reflected again in Elihu Stewart's report for 1904 (Canada 1905). He described how the forestry station at Indian Head in Saskatchewan had been started in 1903 with planting beginning in 1904. This was to become the major centre for development of planting stock for forestation of the prairie, as well as serving as a demonstration area. He apparently felt compelled to add the following rationale:

> "....... every civilized country at the present day recognizes the furnishing of information on matters in which any considerable number of its people are interested as a legitimate exercise of its government. We have in Canada information given by the government on nearly every branch of industry. We have our agricultural colleges and experimental farms where experiments were made in agriculture and horticulture: our dairy associations, fruit growers' associations, agricultural societies and various others, receiving both federal and local government support. Surely the establishment and maintenance of a forestry station where object lessons on a subject of such importance to the people of Canada as her forests may be given needs no argument to justify it."

The number of forest fire rangers in Alberta regularly employed in the 1904 season included 12 on the east slopes of the Rocky Mountains between the international boundary and the North Saskatchewan River under forest ranger Joseph E. Stauffer, and four in Edmonton district under forest ranger John A. C. Cameron. This represented a substantial increase from four in 1903, but there were still very few for the area involved.

In 1905 Elihu Stewart again made an impassioned plea for support for forestry (Canada 1906a). He also indicated that a forestry policy had not yet been established:

> "Before dealing with the details of the work of the branch, it may be well at this stage, when we are endeavoring to develop a forestry policy, to consider what should be the aims for the future of those entrusted with this work."

He reviewed the value of the Dominion forests, their extent, imminent demand for a variety of purposes, and affects on prairie climate. He also emphasised the need for protection from fire, and a proper system of cutting.

In the meantime, significant political developments were taking place which were to culminate in provincial status for Alberta and Saskatchewan in 1905. One of the driving forces was the increased pace of immigration. Bliss (1966) summarized the situation in a preamble to citing portions of a 1904 speech by Clifford Sifton, minister of the Interior:

> "The major failure in Macdonald's policy of nation building had been the sparse settlement of the Canadian West. In the late 1890's, for numerous reasons, settlers finally began to pour into Canada. Clifford Sifton, Laurier's Minister of the Interior, directed a skillful and extensive campaign to attract settlers to Canada."

Some of Sifton's remarks, as taken from the extract provided by Bliss (1966) are relevant:

> ".......we look in the near future to see upon these western plains, and in this western province and territories, a great population; great not only in numbers, but in other respects..... We look forward to other things. We look forward to the production of natural wealth of all kinds. In this great country we expect to see the wealth of the field, of the forest and of the mine exploited in vast quantities, furnishing remunerative occupation to large numbers of our people....... But it will not be enough that it (western Canada) shall do only for itself. It is a portion of Canada..... Each and all parts must contribute to the vitality of the whole. What then will western Canada do for the Canadian organism?...... a vast and profitable traffic to its railways and steamship lines......remunerative employment to ten of thousands of men...... to engage in the multitude of occupations which gather around the great system of transportation....... build up our Canadian seaports........create a volume of ocean traffic......furnish a steady and remunerative business to the manufacturers of eastern Canada, giving assured prosperity where uncertainty now exists."

The tone was set for an expansionist, exploitative economy based on natural resources. However, the financial problems which followed were described by Oliver (1914). They provide a perspective from which to view the seeming inaction on staffing to meet fire problems and to provide other services in the North West Territories - sources of aggravation to the territorial population and contributing to aspirations for self-government.

> "The increased volume of immigration necessitated heavier expenditures upon education, public works and local administration. It was impossible to introduce Municipal organizations into many districts outside the limits of the denser settlements. The result was to impose upon the Territorial Government excessive burdens. Financial embarrassments gave rise to constitutional aspirations."

MacGregor (1972) described how Alberta's population increased from about 30,000 in 1895 to 185,412 by 1906 as a consequence of accelerated settlement. A summary of the number of homestead entries for Manitoba, Saskatchewan and Alberta (Canada 1916) provided an index of relative rates of growth. There was a virtual doubling of activity over the two years in 1901-02 and 1902-03. This is illustrated in Table 4.1.

As the movement for granting provincial status grew, a difference of opinion developed between the Council of the N.W.T. and the federal government about whether there should be one province or two or three on the prairies. Oliver (1915) printed the text of a letter from F. W. G. Haultain, premier of the North West Territories, to Sifton, written Jan. 31, 1903. Haultain reviewed the constitutional aspirations of the people of

Table 4.1

Number of homestead entries reported since 1874 for Manitoba, Saskatchewan and Alberta. (Canada 1916d)

Departmental Year Ending	Number of Entries
Oct. 31, 1874	1,376
Oct. 31, 1875	499
Oct. 31, 1876	347
Oct. 31, 1877	845
Oct. 31, 1878	1,788
Oct. 31, 1879	4,068
Oct. 31, 1880	2,074
Oct. 31, 1881	2,753
Oct. 31, 1882	7,483
Oct. 31, 1883	6,063
Oct. 31, 1884	3,753
Oct. 31, 1885	1,858
Oct. 31, 1886	2,657
Oct. 31, 1887	2,036
Oct. 31, 1888	2,655
Oct. 31, 1889	4,416
Oct. 31, 1890	2,955
Oct. 31, 1891	3.523
Oct. 31, 1892	4,840
Oct. 31, 1893	4,067
Oct. 31, 1894	3,209
Dec. 31, 1895	2,394
Dec. 31, 1896	1,857
Dec. 31, 1897	2,384
Dec. 31, 1898	4,848
Dec. 31, 1899	6,689
June 30, 1900	7,426
June 30, 1901	8,167
June 30, 1902	14,673
June 30, 1903	31,383
June 30, 1904	26,073
June 30, 1905	30,819
June 30, 1906	41,869
Nine months ending March 31, 1907	21,647
Mar. 31, 1908	30,424
Mar. 31, 1909	39,081
Mar. 31, 1910	41,568
Mar. 31, 1911	44,479
Mar. 31, 1912	39,151
Mar. 31, 1913	33,699
Mar. 31, 1914	31,829
Mar. 31, 1915	24,088

the territories, debates in the council and results of elections to press the case that there should be but one province to cover the prairies. Further, this one new province should have equal rights with all other provinces of the Dominion with the same financial consideration that was given to them, control of the public domain "in the West, by the West and for the West", compensation for the alienation of any part of the public domain for purely federal purposes, and removal of the "unjust and onerous Canadian Pacific Railway exemption from taxation". The new province would possibly have been called Assiniboia.

MacGregor (1972) described the tendency of eastern politicians to impose party divisions along Liberal and Conservative lines on the new provinces, and the resistance of westerners to the feeling that government on the prairies should automatically follow established party lines. These representations were to no avail, and two new provinces were established but without control of public lands. "An Act to Establish and Provide for the Government of the Province of Alberta" was assented to July 20, 1905. The act provided that, as the province would not have the public land as a source of revenue, there would be half-yearly payments from Canada, escalating as population grew. Section 21 of the Alberta Act stated:

> "All Crown lands, mines and minerals and royalties incident thereto, and the interest of the Crown in the waters within the province under *The North West Irrigation Act, 1898*, shall continue to be vested in the Crown and administered by the Government of Canada for the purposes of Canada......."

The scene was thus set for a form of dual administration within Alberta and the other prairie provinces for the next 25 years.

The impetus behind the increase in settlement during the early 1900s apparently came largely from the actions of Clifford Sifton, minister of the Interior under the Laurier government from 1896 to 1905. Bridle (1916) later wrote:

> "Sifton will be remembered as the first Minister of the Interior we ever had whose name anybody but the archivist could remember. In fact, we were much like the over-healthy person, unconscious that we had an interior until Clifford Sifton took that portfolio."

> "This man seemed to come forth out of the West, without any of the essential character of the Westerner. He is a native of Middlesex, Ontario, a product of colleges, and Osgoode Hall, a brilliant scholar, a Master of law....."

Sifton had moved to Manitoba where he became city solicitor for Brandon, was elected to the Manitoba legislature for Brandon, and later became member of Parliament to Ottawa. His activities and policies were outlined by Bridle.

> "He was Minister of the Interior for the most spectacular decade of our history. He had the portfolio that meant most to the progress of the country. He had prepared for it by ability, experience, and hard work."
>
> "In 1896 Mr. Sifton knew the West better than most of the men who had lived there twice as long..... He forsaw the swift moving-picture drama that was to enact itself on these vast occupied prairies..... He knew that above all things the West needed people. Wealth was there to be produced. Producers must be got. Railways must follow, or if need be go ahead of the producers. Government land must be homesteaded..... To get the landless men onto the manless land became, in simple outline, the great agenda of Clifford Sifton."

The twin policies of immigration and railway building were the foundation of the welfare of the Laurier regime, according to Bridle, and Sifton was the "courageous innovator as Minister of Interior" without whom the vision could not have been carried out.

6. ALBERTA-DOMINION ADMINISTRATION 1905-1930

6.1 Establishing the Forest Reserves 1905-1911

Greatly increased immigration and settlement along with the resultant economic activity brought new pressures on the forest resources. The policies of Clifford Sifton were continued under the new minister, Frank Oliver, who served from April 1905 until the resignation of the Laurier government in 1911 (*The Bulletin* 1933). According to Batten (1977) Frank Oliver was a "fiery young Ontario printer at the time he settled in Edmonton in 1876". He was born in 1853 in Peel County, Ontario, spending his early years on his father's farm. He learned the printing trade at George Brown's *Globe* and at the *Manitoba Free Press*. According to the *The Bulletin* (1933), Edmonton at that time was a mere village controlled by the Hudson's Bay Company. Oliver established the first building for trading purposes outside the HBC fort. He made his living as a trader until 1884, bringing his merchandise in by summer over the long prairie haul, and disposing of the goods in the winter. With the arrival of the government telegraph line in 1879 he decided to establish a newspaper, *The Bulletin*, which grew as Edmonton boomed. He was active in the political scene, as described in the *The Bulletin* (1933).

> "In 1883 Mr. Oliver was elected to the council of the Northwest Territories, and had the distinction of being the first member elected to that body...... From 1888 to 1896 he sat continuously in the Legislative Assembly which succeeded the council and in which wider administrative powers were vested. As a member of these bodies he was responsible for giving the Territories their school law and their election law."

> "In 1896 Mr. Oliver was elected to the Federal House as an Independent Liberal. From the outset he proved an effective exponent of western rights and interests. In the subsequent elections he was returned as a straight Liberal candidate and became one of the leaders of his party. On April 8, 1905 he was sworn into the Privy Council and appointed Minister of the Interior in the Laurier cabinet, which office he filled with energy and distinction until the resignation of the government in 1911."

There is no evidence immediately available to indicate the extent, if any, to which consultations were held between the federal and Alberta governments about policies which should prevail for the protection and management of the forest resources. There was undoubtedly some communication, and the Alberta members of Parliament would certainly have had an opportunity to express opinions. Above all, however, policy directions were undoubtedly given local impetus by Oliver, as minister of the Interior.

During his tenure forest policies became focused more clearly on a system of forest reserves on which major attention could be directed, rather that through diffusion of effort over the entire region.

The year 1906 was an eventful one, highlighted by two major actions: a national forestry conference, and passing of "An Act Respecting Forest Reserves".

In January 1906 a great forestry convention was held at Ottawa, at the call of the prime minister, Sir Wilfred Laurier, and under the authority of the Canadian Forestry Association. The Canadian Forestry Convention was opened by the Governor General and presided over by the prime minister. Laurier himself urged upon the convention the great necessity of restoring the forests (Knechtel 1908a). Elihu Stewart, the superintendent of forestry (Canada 1907), commented that it:

> "......was by all odds the most important gathering of the kind ever held in Canada, and has contributed to further arouse public attention to our great forests and the forestry problems in general."

Johnstone (1973) elaborated on the significance of the convention, noting that Stewart was on the executive committee and R. H. Campbell was its secretary.

> "... The Convention itself was an expression of the general awareness on the part of the government, the forest industries and the concerned public of the growing importance that the forests and their preservation had for the future of the country. It was held in the Railway Committee Room of the House of Commons from January 10 to 12, 1906, and 276 delegates took part in it, more that 50 different contributions being made by speakers, ranging from forest fire to forest and irrigation, the lumber industry and the pulp and paper industry. The general gist of the Convention was best expressed in the resolutions that were presented. The Committee on Resolutions was chaired by Stewart. The first resolution was brief and to the point:
>
> "Resolved, that the time is now ripe for a general forest policy and that the Federal government be asked to inaugurate the same."

Johnstone remarked that 68 years later, there would still be no federal answer to that request. Increased fire-ranging systems were called for, and the necessity of conserving the timber on watersheds was emphasized. Johnstone also noted that the convention called for proper fire protection along railway lines when such lines cut through wooded areas. It also called for replacement of the axe by the saw in cutting trees to reduce waste. Johnstone cited part of Laurier's concluding words - a message which is unfortunately still relevant.

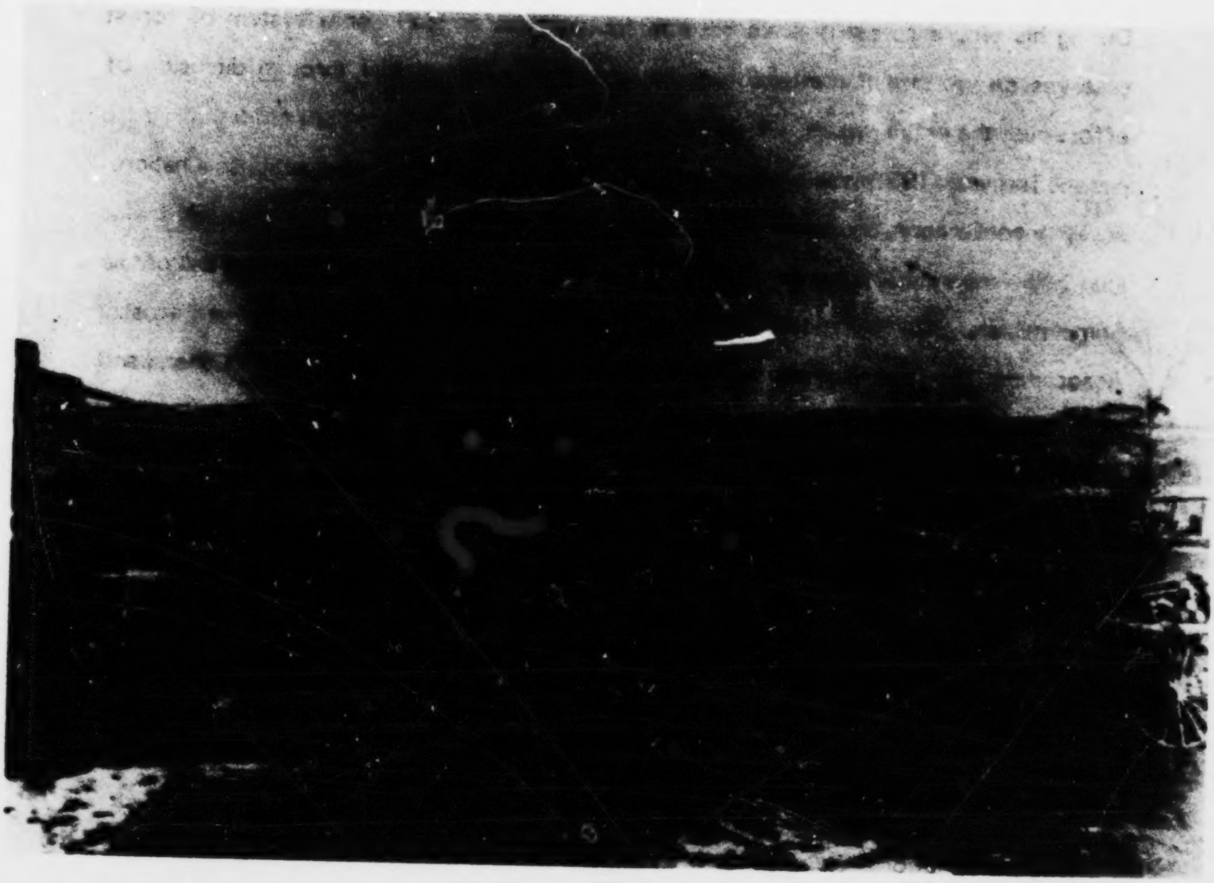


Figure 26. John Walter's sawmill in Edmonton. The timber supply driven on the North Saskatchewan River. Old Fort Edmonton is in the background. (Provincial Archives of Alberta A 2252)

"... We are dispersing now. Our labours are at an end--no, I am mistaken, our labours are just commencing. It is not sufficient for us to say that we have done our work, that it is completed. Again, I repeat, it is only commencing. We have worked as a collective body. It becomes every one of us now to work individually and singly and I desire every man in this audience as he goes away to his home and to his own avocation to become a missionary in the work of forestry. It is not sufficient that we should feel strongly upon this subject. Unfortunately, we have to remember that the Canadian people at large have been too indifferent in the past to it. We must interest the nation, interest the individual, the farmer, the settler, the lumberman, everybody in the great work which is involved in forestry..... "

Stewart commented on the second major event, the Forest Reserves Act, in his report (Canada 1907):

"At the last session of parliament, an Act respecting forest reserves was passed which places the management of them under this branch of the department. It is to be hoped this is only a commencement and that all timbered land which is unsuited for agriculture or grazing purposes and which is suited for growth of timber will be in time permanently set aside for that purpose."

"The Act also provides that the fish and game within these reserves shall be looked after by this branch."

"As has been stated in previous reports, the two cardinal points that have been constantly kept in view since the organization of this branch have been *conservation* and *propagation*."

Stewart continued by outlining the reasons for establishing forest reserves.

"......Most of the reserves so far set aside have been on land unsuited for agriculture but which will produce timber. In many cases this is owing to the high altitude; in other cases, such as in that of the Spruce Woods Reserve, the soil is so poor that agriculture crops cannot be successfully grown on it. But the most important consideration that has impelled the department to take up this matter is in order to conserve water supply."

"It is not too much to say that the future of the prairie regions for the growing of grain will be greatly jeopardized if the water level in the soil is decreased, and this result will certainly follow if the natural reservoirs at the sources of supply in the hills are destroyed, as they would be if the timber thereon were removed. So important is this that even if the land in such reserves only served this simple purpose, it would be wise to keep it in forest. But while serving this purpose it is the aim of the department to utilize the land for the production of timber and to so harvest the timber crop that a permanent supply may be continuously maintained, and in order to direct what may be cut, and to what extent, a careful examination or forest survey is necessary."

"Permit me to emphasize what I have said in other reports, that the products of these forests and all others on public lands are for the use of the public, and the object aimed at is to administer them so that their highest use, not only for the present, but future generations may be secured."

An important provision of the bill was to transfer the administration of forest and game reserves from the Timber and Mines Branch to the Forestry Branch. This was intended to bring together for the first time the timber and royalty-collecting functions with those of protection and management - but it was to be several years before it was effectively done.

The House of Commons debates for May 8, 1906, (Canada 1906b) recorded discussions which followed the second reading of the Bill Respecting Forest Reserves. In response to a question from R. L. Borden, who requested a general outline of the general provisions of the bill, Oliver explained:

> "It is a number of years since the government entered upon a policy of establishing forest reserves. The following reserves were created by departmental order or by order in council."

Reserve	**Date of Withdrawal**	**How Withdrawn**
Riding Mountain	July 13, 1895	Dept'l Order
Duck Mountain	Recommended by ranger, Jan 1, 1904	No definite action taken yet
Lake Manitoba West	July 13, 1895	Dept'l Order
Spruce Woods	" "	Dept'l Order
Turtle Mountain	" "	Dept'l Order
Moose Mountain	Dec. 29, 1899 *	Dept'l Order
Beaver Hills	Aug. 29, 1901	Dept'l Order
Pines	Nov. 14, 1905	Dept'l Order
Cooking Lake	June 15, 1899 *	Dept'l Order
Glacier	Oct. 10, 1886 *	order-in-council
Long Lake	Nov. 3, 1902	Dept'l Order

* These dates do not correspond to those cited by Knechtel (1908b) and bear further research.

Borden asked on what authority the department had established reserves by departmental order. Oliver responded that the department had standing authority to withdraw lands from sale, and saw fit to withdraw those particular lands:

> "the principle of reserving forested tracts in the prairie country is a policy that has prevailed since 1893 in a greater or less degree..."

The list presented did not include all the reserves included in the Bill under discussion.

The authority to withdraw lands from settlement applied only to lands under government control. He explained that the purpose of the proposed act was to arrange for the control of any property under other ownership than that of the department, and to make full and complete provision, as far as it could be made by legislation, to carry out the idea which was in mind when the reservation was made by departmental order. He indicated that the location of the proposed boundaries was based on judgement and was subject to later revision. The reserves were intended:

> "......to set apart in the interests of the preservation of the forests with a view to conserving the water supply of the drier parts of the country."

Subsequent discussion about this bill covered 108 columns of Hansard. Discussion was wide-ranging, dealing with questions of reservation from settlement, size and locations of reserves, status of squatters on reserves, the system of licencing timber, administration, and fire protection, among other points.

Sir Wilfred Laurier attempted later in the debate to clarify the object of the bill under discussion:

> ".......is to provide for the creation of forest reserves. We had a forestry convention at Ottawa last year, and it was the unanimous opinion of that convention that we should take care of our forests where they exist and try to create forests where we have none. At present we have the power of creating a reserve by order in council, which has been been done. But it was represented at that convention that some of these reserves which had been created by order in council, have been afterwards removed by order in council. The object of the Bill is to set aside certain areas in the different provinces and make them state forests. If this Bill becomes law, it will not be possible for the Governor in Council to alter in any way the areas set apart for these forests, and in this we shall be following the example set by France and Germany. The government will not have the power, under any circumstances, to alter the area or sell part of those lands. Should a condition of things arise which would make it advisable to alter the area of the forests so created, parliament alone will be able to do so. Therefore, the object of this legislation is primarily to set apart certain areas of land which shall be preserved as forests."

There appeared to be general support in the House for the bill, points of dissention relating largely to details contained within it. Even R. L. Borden, later to become prime minister, had this to say:

> "I am sure that we all agree to what has been said by the Prime Minister as to the importance of this subject. I attended the forestry convention to which he has alluded, and two facts which were brought out in the discussion there impressed me very much. One was the great danger from fire. The other was the enormous wealth that can be gleaned from forests when they are properly administered and preserved."

G.W. Fowler, a member from British Columbia, commented:

> "The principal criticism I would make of this Bill is that it has not taken in enough timber territory. I think this Bill is a move in the right direction; it is one of the most important Bills that have come up before this House. With regard to danger of fire from settlers, the principal danger in British Columbia is from the prospector......"

The bill made provision for a number of the administrative details to be covered by regulations approved by order-in-council. The minister had difficulty responding to questions about details since apparently they had not yet been developed. Fowler commented that the bill made no provision for financial contribution by holders of timber licences toward the expenses of fire rangers, and proposed that holders of timber licences both within and outside of forest reserves should be placed on an equal footing by both having to contribute to some extent to fire protection. In subsequent discussion on June 19, 1906 (Canada 1906c) the minister, Frank Oliver, stated:

> "The arrangement now existing is that wherever the government fireguards timber which includes a limit, the limit holder has to pay half the cost. Of course within the timber reserve, while the same regulations would not apply, I assure the House that the holder of a limit within the reserve would not be relieved from at least an equal liability regarding fire protection as compared to holders outside the reserve. The holders of limits within the reserve might have to bear a greater burden, although I would not promise that. But I assure the House that they would have to pay at least an equal amount towards the cost of fire guarding just as if the timber reserves had not been created."

Some concerns were expressed earlier in the debate about the ability of the government to administer and enforce the provisions of the bill. A Stuart Henderson (Canada 1906b) wondered whether the government intended to have only one superintendent of forestry, suggesting that an "army of men will be required to guard the interests of the government and of the people in the preservation of that timber, to say nothing about the preservation of game". A W.O. Perley referred to regulations in Ontario and Quebec which had always been "well drawn" but referred to the difficulty of enforcing them.

> "Then there is the danger of fire. At times fire is caused by the lightning, but the chief trouble is with sportsmen, hunters and other people travelling through the country, who light camp fires and do not put them out when they leave. I would like to suggest to the hon. minister regulations are very easy to frame, and no doubt he intends framing them in the best possible manner, but it is the carrying out and the enforcing of these regulations which is really the most serious matter at issue. I am heartily in sympathy with the intention of this Bill. Although I am not personally interested in that part of the country, I feel that those who have limits within these reserves are going to be in much better shape than they

> are now. Let me say that any lumberman whose limits are protected in this way, and to whom the right to cut on these limits is assured, may cut practically in perpetuity........I would strongly urge on the Minister to see that a proper system is established and enforced and that the Superintendent of Forestry is made to see that the regulations are properly carried out."

W. J. Roche, later to become minister of Interior in the Borden government, asked whether it was the minister's intention to appoint any forest rangers. (Canada 1906b). Oliver replied that he could not at present give any definite information, but stated that it would be necessary:

> "......in order to secure the greater enforcement of the regulations which we propose to pass, and the general protection of the timber, to appoint more forest rangers than we have at the present time....."

Subsequent discussion indicated that the numbers of forest rangers would vary with the season, some would be permanently appointed and some temporarily. Oliver concluded:

> "There are times and seasons ......when a hundred men are required to do work that does itself at other times. It would not be reasonable to employ the hundred men all the year round, nor would it be reasonable not to employ them when the circumstances required their employment."

The opposition members could not resist making political jibes which undoubtedly tempered future recommendations for staffing. W. J. Roche responded to Oliver:

> "I quite agree with the Minister that there are times when the government finds it necessary to employ quite an army of these men, especially prior to an election period. Such I know has been their practise in the past, and I am quite sure that under this Bill they would consider it necessary to have a little army of forest rangers who will devote most of their time to do other things than their duties."

In response to a question on a financial supply item, Oliver (Canada 1906c) listed the names and salaries of 48 new outside appointees to handle the increased load incurred by settlement and development in the Dominion lands of the four western provinces, a budget total of $48,039. In another jibe, a Mr. Cochrane asked "Where do you put them all?"

Costs notwithstanding, there was still some concern in the House about forest fires and human carelessness. Towards the end of the debate of the bill respecting forest reserves, Oliver (Canada 1906b) suggested three months imprisonment in default of fine upon conviction under the act. A Mr. L. G. McCarthy asked:

> "Is not three months rather a short period? Suppose a man deliberately set fire to the forest, three months would be a very light sentence."

Oliver replied that he would accept six months, which was agreed to.

The act was passed July 13, 1906 (Knechtel 1908b). In Alberta, one forest reserve was established by the Act of Parliament - the Cypress Hills Forest Reserve in southeastern Alberta containing 18 square miles. Elk Island, later to be a national park, was also reserved by order-in-council on that date. The Cooking Lake Dominion Forest and Game Reserve, containing 114 square miles lying southeast of Edmonton, had been previously established June 5, 1899, by department order.

In the annual report for 1906 (Canada 1907) R.D. Craig, inspector of forest reserves, observed that the Cooking Lake Reserve had suffered more from fire than any of the others, and that there was hardly a square mile of virgin timber left. He described the original stand as spruce, larch, aspen, balm, birch, with some jack pine and balsam. He noted that the conifers had almost disappeared, with only an odd old spruce or larch which had been protected by muskeg or a hill remaining to show that there once was a coniferous forest. He recommended appointment of a special ranger to guard the reserve from fire, as the present forest ranger had too large an area of timber land to look after to enable him to give the attention he should to the reserve.

Craig also commented that:

> "In view of the rapid influx of settlers to the Northwest, many of whom settle in advance of the surveys, I would strongly recommend that the forested country within reach of settlement be thoroughly explored and that all land which is not suitable for agriculture, but is capable of producing forest be set aside as permanent forest reserves, within which settlers will not be allowed to locate. It is very much easier to get rid of a squatter before he has made any improvements than after he has built a a home for himself. These isolated settlers in a timbered district are the greatest menance to forest protection, as they are constantly setting fire, and it would pay the government to employ a much larger number of rangers to constantly guard the forests of the North-west from fire and prevent settlement within them."

> "Adequate forest protection is possible only under the reserve system, since forestry and settlement are two irreconcilable factors in a new country."

With that object in view Craig suggested early examinations be made in the foothills of the Rocky Mountains, McLeod River and Lac la Biche areas in Alberta to determine their suitability for forest reserves. It is interesting that the general policy he then suggested with respect to settlement, distinguishing lands best suited for agriculture or forests, was one adopted by the Alberta government, but not until 1948.

Craig made an interesting observation on the effects of fire in his discussion of the Moose Mountain Forest Reserve in Manitoba. He stated:

> "The devolution from forest to prairie through fire can be seen in all stages along the edge of these mountains and the Indians tell us that the forest once extended over a large area which now through fire and grazing is a rolling prairie."

If burning by Indians on the prairie was endemic in earlier days, this comment suggests that the influx of settlers led to additional fires which, through inadequate protection services, may well have burnt over more extensive areas and more frequently than in pre-settlement times. Subsequent cultivation, construction of roads and organization of protective services would have later resulted in a decrease in rate of burn compared to either of these two periods.

Joseph Stauffer, forest ranger at Didsbury, Alberta, included this comment on burning by Indians in 1906 (Canada 1907):

> "I always understood that Indians would never set out fires in the forests, but this year I was convinced that they do; for hunting purposes, in season or out, in the Banff Park and out of it. They set out fires in the spring on their fishing and hunting trips in order to draw deer later for grazing."

W. W. Cory, deputy minister of the Interior, reported the resignation of Elihu Stewart on March 1, 1907 (Canada 1908), in order to engage in private business. He paid tribute to "the zeal and ability which he displayed" and attributed to him much of the success in tree planting, forest protection, and activities of the "Dominion Forestry Association". Johnstone (1973) was warmer in his recognition.

> "Elihu Stewart was a man of vision and action. Promoter and confidant of a Prime Minister, he had the ability to sell forestry to the public and the politican alike. In carrying out his program, he established an organizational framework for the continuing development of forest management in Canada. Men such as Stewart are rare in any land, and forestry in Canada blossomed under his guidance."

Robert Henry Campbell was appointed successor to Stewart. He had been chief clerk in charge of the Timber Branch and, as Johnstone (1973) pointed out "..... was a close associate of Stewart and shared his vision for the future of forestry in Canada." Cory stated that Campbell was well qualified to perform the duties of that important position through the special study he had made of the forest resources of the western provinces, coupled with his experience gained as Secretary of the Dominion Forestry Association.

Johnstone (1973) added that Campbell was born at Ailsa Craig, Ontario, in 1867. He was educated at Strathroy, Ontario and at the Ottawa Collegiate Institute. He entered government service at the age of 20 and received all his training there. He was, in turn, secretary to the deputy minister and to the minister of the Interior. He then became chief of the Timber, Mining and Lands Branch until 1907. During this time and later he was active in the Canadian Forestry Association, and active in formation of the Canadian Society of Forest Engineers (later Canadian Institute of Forestry), becoming its first elected vice-president. Johnstone commented that Campbell may also have been the most far-sighted leader the Canadian Forestry Service ever had.

In his first report Campbell (Canada 1908) reviewed Stewart's work briefly. He stated in part:

> "When Mr. Stewart assumed the office in 1899, nothing had been done by the Dominion to organize a fire preventive service. To this work he first addressed himself, and developed it from year to year, till during the past season there were 52 fire rangers acting on Dominion territory, and the testimonies to the efficiency and value of the service are numerous and widespread."

Campbell also referred to the cooperative Tree Planting Scheme begun in 1901 which had resulted in almost 8.5 million trees being distributed to over 3,000 settlers. The total area of forest reserves was almost 3.5 million acres, timber surveys being completed on two of them and continuing on others with "the purpose of laying out scientific plans of management".

At this stage the policy appeared fairly settled - to establish forest reserves and to intensify protection and administration of them. The subsequent question evolved to one of how into achieve that end. Campbell stated (Canada 1908):

> "For the proper administration of the reserves it will be necessary to enlarge the staff and perfect the organization. Temporary fire rangers in the summer and unskilled assistance in the winter must give place to a permanent staff of qualified forest rangers if the purposes for which the reserves are established are to be properly carried out. The reserves have suffered severely from fire and must be guarded carefully. With such protection and technically qualified officers to make timber surveys and lay out working plans, the organization will be complete."

In 1907 the University of Toronto appointed Bernard E. Fernow to start a school of forestry. The strong middle European influence in forestry was evident. Johnstone

Figure 27. Robert H. Campbell, federal director of forestry 1907-1923. (Canadian Forestry Service).

(1973) paid tribute to Campbell's support of forestry education and noted that of the 41 graduates in the first seven classes at Toronto, 31 received their first employment with the Dominion Forestry Branch. Johnstone also cited T. W. Dwight who stated that in his opinion R. H. Campbell did more than any other individual to get the schools off to a good start and establish the profession of forestry in this country. Early graduates of this program substantially affected the course of events in the Dominion Forestry Branch.

The Board of Railway Commissioners for Canada passed a stronger order under the Railway Act on July 4, 1907 with respect to fireguards along railways, which read as follows:

> "9. Every railway company subject to the legistrative authority of the Parliament of Canada operating a railway by the power of steam, in the Province of Alberta, shall establish and maintain along the line of railway where the same passes through prairie country in the said province, on each side of such line of railway and of not less than three hundred feet in width from the centre of the railway, a good and sufficient fireguard to be made by ploughing the land to the extent of not less than six furroughs in width of the side of the fireguard farthest from the railway, and by burning or otherwise freeing from inflammable materials the spaces between such ploughing and such line of railway."

That same year the Department of the Attorney General of Alberta published a compilation of ordinances of the North West Territories including the ordinance for the prevention of prairie and forest fires. That 1907 consolidation is included in the Appendix.

Some interesting staff appointments were reported by Campbell in 1908 (Canada 1909a). Abraham Knechtel was appointed inspector of forest reserves. He had received a degree in forestry from Cornell University, visited Europe to study systems of forestry applied there, and was forester to the Forest, Fish and Game Commission of the State of New York. Appointed as staff members were H. R. MacMillan, a graduate of Yale School of Forestry, and J. R. Dickson, a graduate of the School of Forestry at the University of Michigan. Archibald Mitchell of Edmonton was appointed permanent assistant in the Tree Planting Division at Indian Head. Mitchell received training in forestry in Scotland and had been living in Alberta.

During that year the work in connection with irrigation and the administration of parks was placed in the immediate control of the superintendent of forestry since it was felt that those services were closely connected with the preservation of forest areas. At that time reserves were still being established and boundaries adjusted so that although

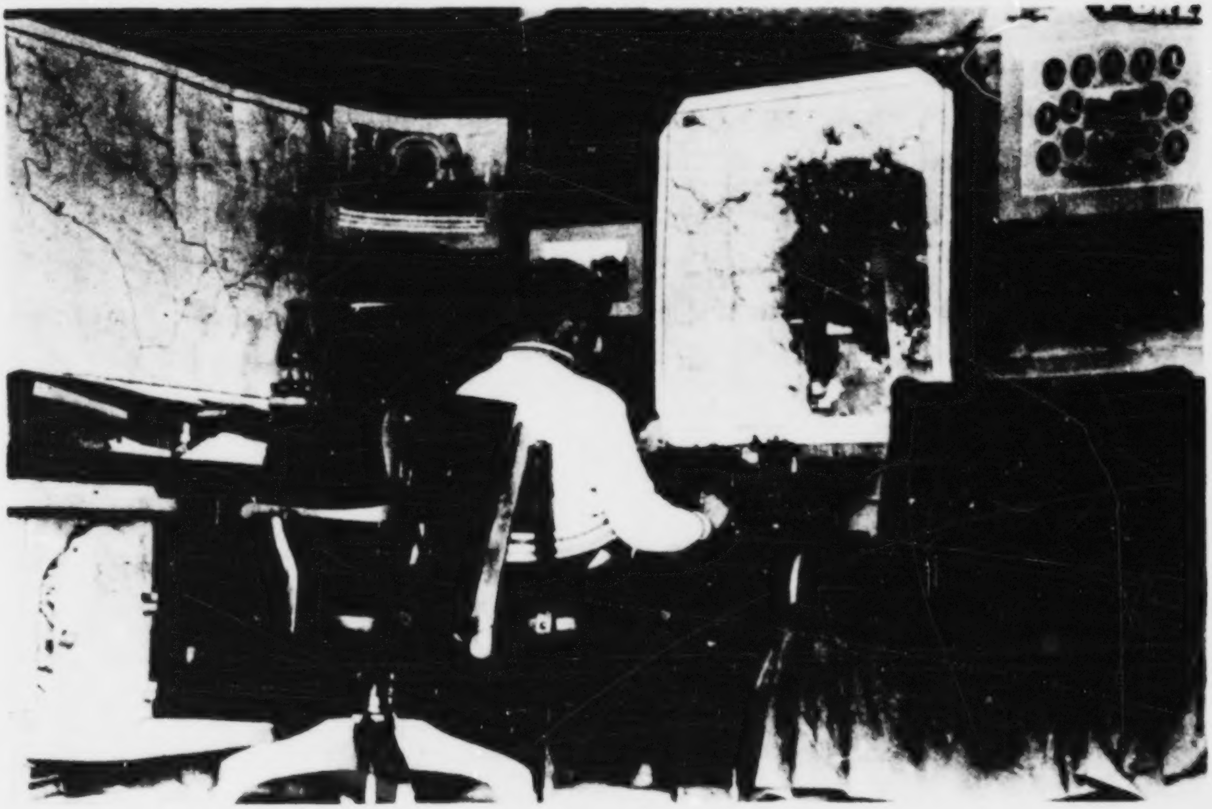


Figure 28. Ranger Stan Clark, University of Toronto graduate, in the Dominion Forestry office at Hinton, 1912. (Provincial Archives of Canada)

there was a general distinction in purposes between parks and forest reserves there was not yet a clear definition of the respective areas.

Although relative progress in fire action was being made, the difficulties were clearly illustrated in staffing levels. Twelve fire rangers were employed in Alberta - seven on the eastern slopes of the Rocky Mountains south of the North Saskatchewan River, and five in the Edmonton District. Of the Edmonton District rangers, two patrolled the Athabasca River from Athabasca landing to Lake Athabasca, one patrolled the Lesser Slave Lake district, and one the line of construction of the Canadian Northern Railway.

Railways continued to create fire problems - a condition which was to prevail for many years. Prevention of fires in connection with railway construction was stressed, and Campbell reported writing to officials of the Grand Trunk Pacific Railway, then being extended west from Edmonton, and arranging for a forest ranger to closely inspect the manner in which the right-of-way was being cleared. This action appeared to have had effective results, particularly in contrast to earlier railway construction projects which were largely unsupervised with respect to fire prevention. W. Margach, chief forest ranger at Calgary, recommended appointing a mechanic as a ranger who would be capable of getting onto locomotives to determine whether or not the appliances on the engine were being kept in condition to prevent the throwing of sparks. However, Campbell believed the number of people who moved into the country preceding and following railway construction were probably a greater danger, along with clearing of land for settlement. Subsequent fire statistics tended to support this view.

The year 1908 was a dry one with a number of problem fires (Canada 1909a). The seasonal rangers in Alberta were increased to 34. Patrols were extended to the Peace and Slave rivers, to reach the most important routes of travel and the timber along them. The special patrol was maintained along the line of the Grand Trunk Pacific Railway and it was stated that as a result no serious fire occurred. Campbell reported that as provided for by the Forest Reserves Act one-half of the expenditure within five miles of the line of contruction was paid by the railway company.

The concern of the Forestry Branch staff about fires and the inadequacy of resources for control of them was evident in the annual report. H. R. MacMillan inspected the Crowsnest Pass district in 1906 (MacMillan 1909a, Canada 1910). He described the

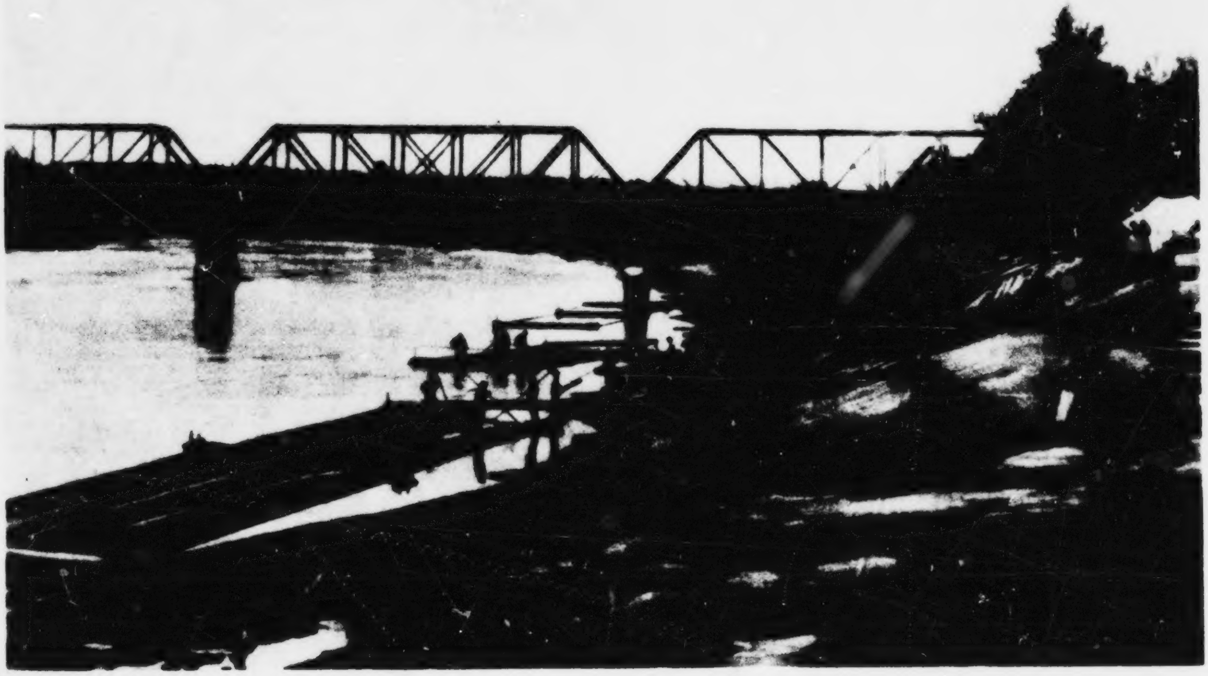


Figure 29. Rafting logs on the North Saskatchewan River at Edmonton. Increasing demand for timber helped to direct attention to the need fo fire control (Public Archives Canada PA 31757)

importance of the area for water supply and the importance of the timber to provide mine props and building materials for the coal mining operations which would undoubtedly develop, and reported that the worst fires occurred about the time the railway was built through the pass. He noted that of the 240 square miles included in the valley, 212 were originally covered with a fairly dense coniferous forest. At the time of his survey only 33 square miles remained unburned. He recognized the need for more help but was conscious of the importance of placing staff where the resource values were greatest. He recommended:

> "A more thorough and efficient fire patrol system is required and in order to organize and distribute it as economically as possible, and to administer the forests on an intelligent basis, a timber survey and mapping of the whole eastern slope should be made with the least possible delay."

Campbell described the distribution of fire rangers with a total then of 34 in Alberta and 13 in Saskatchewan, and how additional patrols had been extended in the northern district. However, he cautioned:

> "While this might seem to indicate that the patrol of this northern district is well provided for it will be seen on reference to the map accompanying this report that there are large tracts as yet entirely unreached, while the districts assigned to rangers cover routes of travel as much as two hundred miles in length. It must be realized that the district to be protected stretches from Hudson Bay to the Rocky Mountains, a distance of 1000 miles, with a width from 300 to 600 miles, and that a patrol of 37 men is a mere handful and utterly inadequate to the task to be accomplished."

His concern was evident in the following comment, in which he tried to put the problems in perspective.

> "The work of the Forest Service in the United States is spoken of in the highest terms of praise and with good reason, but it may be pointed out that, although the extent of Canada is not less than that of the United States, the forest service of the latter has an appropriation of $4,640,000 and a permanent staff of over 2,000, while the Canadian forest service has an appropriation of $100,000 and a permanent staff of about forty. If the Canadian people wish a service equally efficient with that of the United States they must be prepared to deal much more generously with it than they now do."

In spite of limitations, work went on. Restrictions were developed in connection with granting of mining leases on the forest reserves which stressed precautions to be taken to prevent fires.

Campbell reported that many people were using the forest reserves for holiday outings during the summer. He noted:

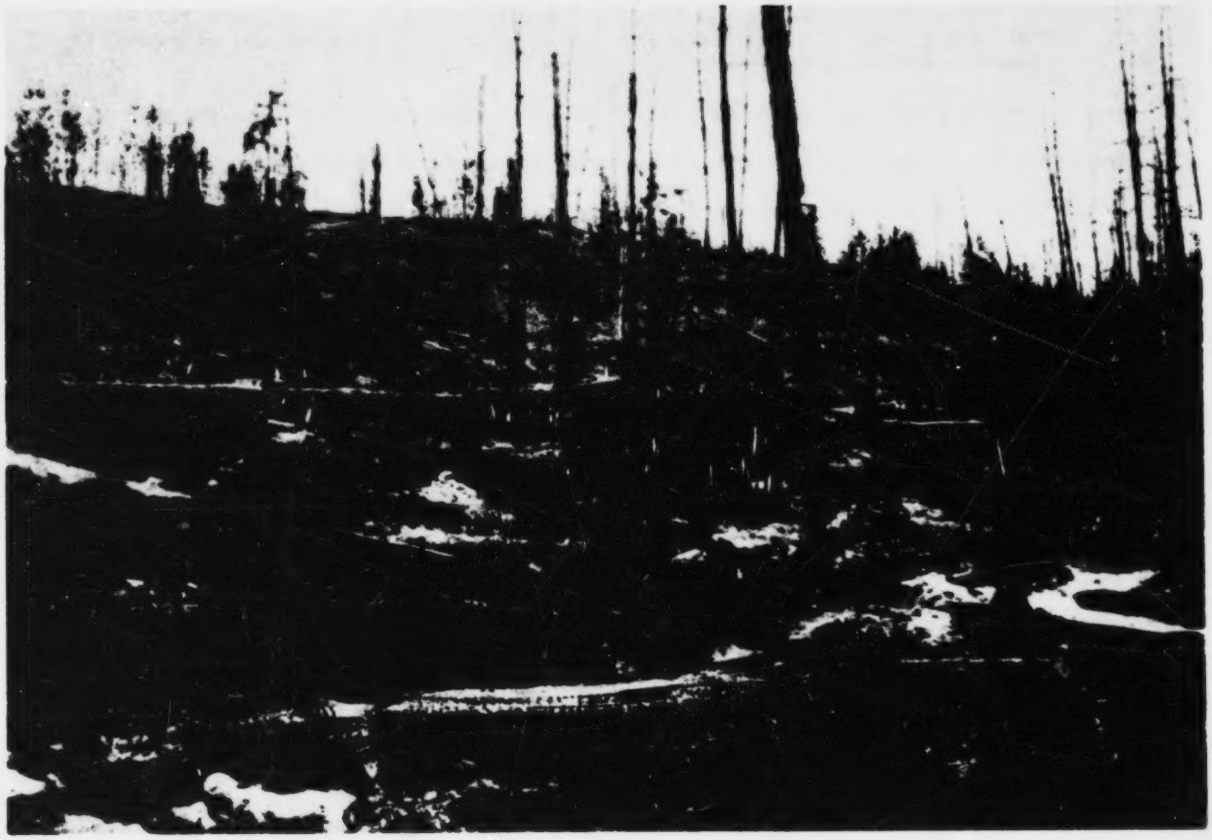


Figure 30. Periodic intensive burns were a frequent reminder of inadequacies in the fire control organization - part of Saunders Creek burn. Photo by W.N. Millar 1914. (Alberta ENR)

> ".....it is considered that this is not only a legitimate use of the reserves, but that the presence of such people, wholly in sympathy with the purposes of the reserves, will be a great assistance in case of fire."

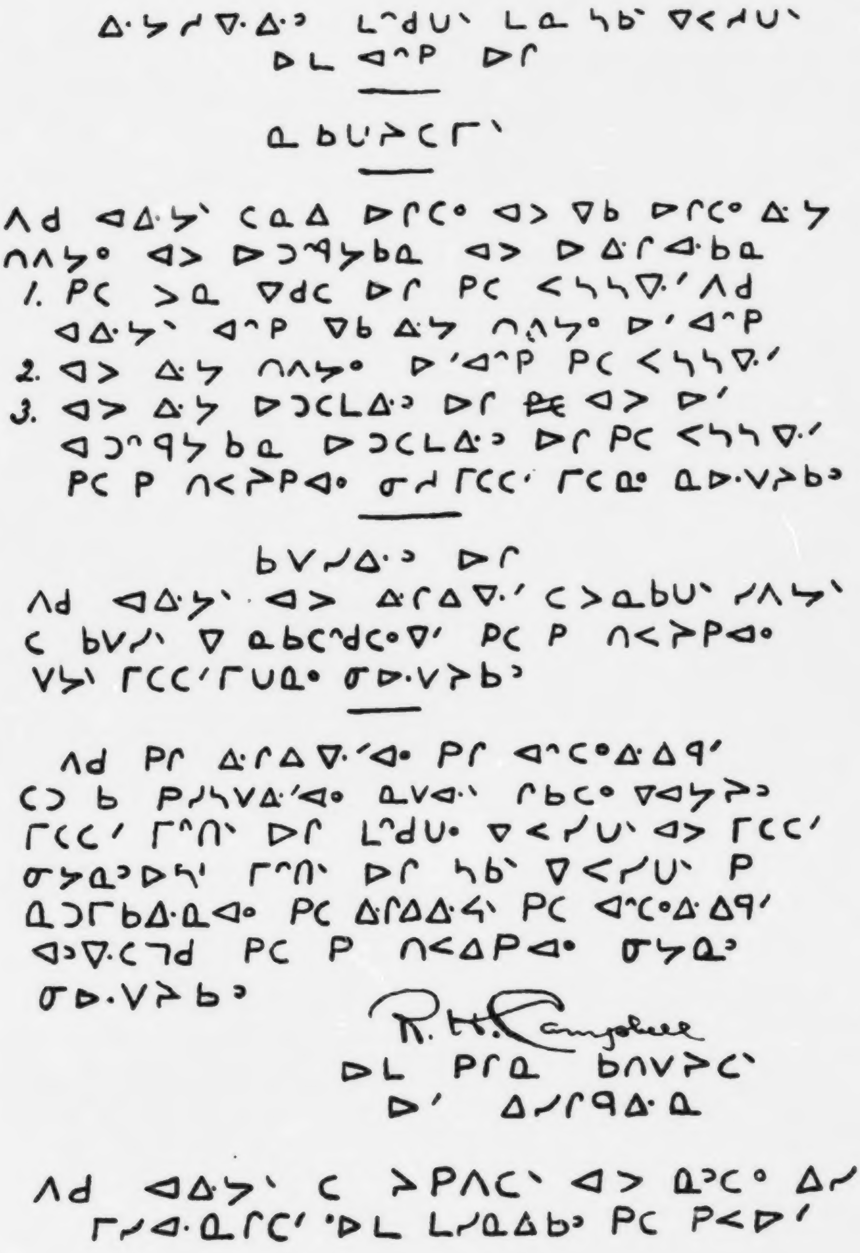
He referred to regulations which had been prepared to deal with the use of reserves for recreational purposes. Lessees and occupants of leaseholds in the reserves were required to provide assistance free of charge in fighting fires.

He felt that it would be necessary to enlist the interest of the Indians to provide for proper protection of the forests. With that purpose in view a fire notice in the Indian syllabic in both Cree and Chipewyan was distributed. He had also planned to have representatives of the department visit principal meeting places of the Indians during the summer, but found there was not enough money in the budget to do this.

The question of grazing on forest reserves was addressed by Abraham Knechtel, inspector of forest reserves, (Canada 1910). It is interesting that this activity, too, was related to fire protection. He explained that the grazing areas were "among timber", and so were included in the reserves rather than excluding the timber along with the grazing. He commented:

> "Nor should the Department prevent grazing on these areas. For several reasons it is desirable that they should be grazed. The forest reserves are for the use of people; then why should good grass be allowed to go to waste if it can be utilized? The grazing may be desirable also as a protection to the woods. In some places the ground is covered with a dense mat of long grass and peavine. This, when dry, offers much fuel for fire; and when the fire once gets into it, it is almost impossible to check the flames. Cattle on the prairie have much the same habit as the buffalo. In going to water they follow one another and make paths which they follow day after day. These paths are fire lines where the fire may be checked, small to be sure, but there are many of them, and they give lines from which to back-fire."

Knechtel compared the fire problems of the northwest with eastern Canada and presented data to show that lower precipitation and higher winds in the northwest created generally more flammable conditions. In addition, he referred to the western problems of sparse population, limited access and inadequate telephone communications. As a consequence, he concluded that "we cannot count much on putting out forest fires so we have to be all the more diligent to see that fires do not get started." The reserves were under constant patrol, summer and winter, and during the danger periods the rangers laid aside all their duties to guard the forest against fire. He also described preventive burning techniques which were employed.



ᐃᐧᔭᓯᐁᐧᐃᐧᐣ ᒪᐢᑯᑌᐠ ᒪᓇ ᓴᑲᐠ ᐁᐸᓯᑌᐠ
ᐅᒪ ᐊᐢᑭ ᐅᒋ

ᓇᑲᑌᔨᑕᒥᐠ

ᐱᑯ ᐊᐃᐧᔭᐠ ᑕᓇᐃ ᐅᒋᑕᐤ ᐊᐳ ᐁᑲ ᐅᒋᑕᐤ ᐃᐧᔭ ᑎᐱᔭᐤ ᐊᐳ ᐅᑐᐢᑫᔭᑲᓇ ᐊᐳ ᐅᐃᐧᒋᐊᐧᑲᓇ

1. ᑭᑕ ᐳᓇ ᐁᑯᑕ ᐅᒋ ᑭᑕ ᐸᓴᓴᐁᐧᐟ ᐱᑯ ᐊᐃᐧᔭᐠ ᐊᐢᑭ ᐁᑲ ᐃᐧᔭ ᑎᐱᔭᐤ ᐅᐟᐊᐢᑭ
2. ᐊᐳ ᐃᐧᔭ ᑎᐱᔭᐤ ᐅᐟᐊᐢᑭ ᑭᑕ ᐸᓴᓴᐁᐧᐟ
3. ᐊᐳ ᐃᐧᔭ ᐅᑐᑕᒪᐃᐧᐣ ᐅᒋ ~~ᑭᑲ~~ ᐊᐳ ᐅᐟ ᐊᑐᐢᑫᔭᑲᓇ ᐅᑐᑕᒪᐃᐧᐣ ᐅᒋ ᑭᑕ ᐸᓴᓴᐁᐧᐟ ᑭᑕ ᑭ ᑎᐸᔨᑭᐊᐤ ᓂᓱ ᒥᑕᑕᐧ ᒥᑕᓇᐤ ᓇᐅᐧᐯᔨᑲᐣ

ᑲᐯᓯᐃᐧᐣ ᐅᒋ

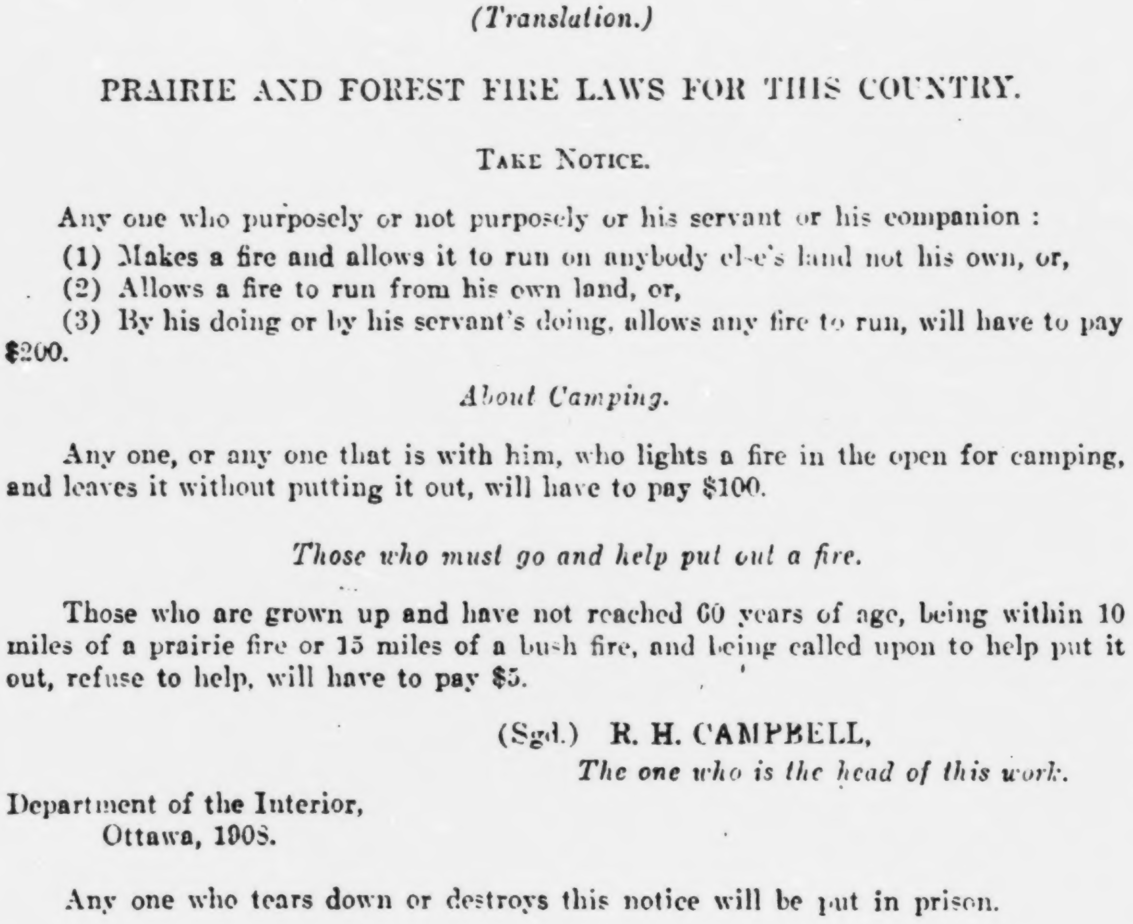
ᐱᑯ ᐊᐃᐧᔭᐠ ᐊᐳ ᐃᐧᒋᐃᐁᐧᐟ ᑕᐳᓇᑲᑌᐠ ᓯᐱᔭᐠ ᑕ ᑲᐯᓯᐠ ᐁ ᓇᑲᑕᐢᑯᑕᐤᐁᐧᐟ ᑭᑕ ᑭ ᑎᐸᔨᑭᐊᐤ ᐯᔭᐠ ᒥᑕᑕᐟ ᒥᑌᓇᐤ ᓂᐅᐧᐯᔨᑲᐣ

ᐱᑯ ᑭᒋ ᐃᐧᒋᐃᐁᐧᐟᐊᐤ ᑭᒋ ᐊᐢᑕᐤᐃᐧᐃᑫᐟ ᑕᑐ ᑲ ᑭᓯᓴᐯᐃᐧᐟᐊᐤ ᓇᐯᐊᐧᐠ ᒋᑲᑕᐤ ᐁᐊᔭᔨᐣ ᒥᑕᑕᐟ ᒥᐢᑎᐠ ᐅᒋ ᒪᐢᑯᑌᐤ ᐁᐸᓯᑌᐠ ᐊᐳ ᒥᑕᑕᐟ ᓂᔭᓇᐣᐅᓴᐟ ᒥᐢᑎᐠ ᐅᒋ ᓴᑲᐠ ᐁᐸᓯᑌᐠ ᑭ ᓇᑐᒥᑲᐃᐧᓇᐊᐤ ᑭᑕ ᐃᐧᒋᐃᐃᐧᔦᐠ ᑭᑕ ᐊᐢᑕᐤᐃᐧᐃᑫᐟ ᐊᐣᐁᐧᑕᒣᑯ ᑭᑕ ᑭ ᑎᐸᐃᑭᐊᐤ ᓂᔭᓇᐣ ᓂᐅᐧᐯᔨᑲᐣ

R. H. Campbell
ᐅᒪ ᑭᒋᓇ ᑲᑎᐯᔨᑕᐠ
ᐅᐟ ᐃᓯᒋᑫᐃᐧᓇ

ᐱᑯ ᐊᐃᐧᔭᐠ ᑕ ᔨᑭᐱᑕᐠ ᐊᐳ ᓇᐣᑕᐤ ᐃᓯ ᒥᓯᐊᐧᓇᒋᑕᐟ ᐧᐅᒪ ᒪᓯᓇᐃᑲᐣ ᑭᑕ ᑭᐸᐅᐟ

Figure 31. Fire prevention poster in Cree syllabic. (Canada 1910)



(Translation.)

PRAIRIE AND FOREST FIRE LAWS FOR THIS COUNTRY.

Take Notice.

Any one who purposely or not purposely or his servant or his companion :

(1) Makes a fire and allows it to run on anybody else's land not his own, or,

(2) Allows a fire to run from his own land, or,

(3) By his doing or by his servant's doing, allows any fire to run, will have to pay $200.

About Camping.

Any one, or any one that is with him, who lights a fire in the open for camping, and leaves it without putting it out, will have to pay $100.

Those who must go and help put out a fire.

Those who are grown up and have not reached 60 years of age, being within 10 miles of a prairie fire or 15 miles of a bush fire, and being called upon to help put it out, refuse to help, will have to pay $5.

(Sgd.) R. H. CAMPBELL,
The one who is the head of this work.

Department of the Interior,
Ottawa, 1908.

Any one who tears down or destroys this notice will be put in prison.

Figure 32. Translation of fire prevention poster. (Canada 1910)

> "Last year we began a practice which we know saved the reserves several fires. It is a well-known fact that, in the early spring, the fields become bare and the grass dry before the snow is all gone from the woods. While such conditions existed the forest rangers burned the meadows along the reserve boundaries. Fires, coming in from the prairie, met this wide fire line and died out for want of fuel."

He described the intention to extend that practice to all reserves wherever practicable, and to carry it out on an intensive scale. Plowed fire guards were also advocated around and across some of the reserves. Roads along the boundaries and through the reserves were particularly mentioned, 150 miles constructed that year to aid in fighting fire, to serve as access and as a fireline from which backfiring could be done.

Archibald Miller (Canada 1910) described a talk he had been asked by the principal of the Provincial Normal School at Calgary to give on tree planting. This first venture in public education appealed to him,

> "The idea of giving the young teachers of Alberta some idea of prairie planting and the general principles of forestry is, I understand, the outcome of a requirement in their curriculum, and which I think reflects great credit on the Educational Department of Alberta. They thus recognize the importance of some knowledge of forestry throughout the West and are taking what steps they can, through the public schools, to bring that knowledge to those whom it will most benefit."

Some insights into the attitudes of the settlers and the public in general may be gained from these assessments by Knechtel (1908b) which he wrote as a preamble to a bulletin on the Dominion forestry reserves.

> "It would almost seem as if the white race had begun wrong on this continent. Needing cleared land for agriculture we start in the woods, and now when we need woods we start on the cleared land. The arrangement was not an economic one. The prairie should have been located near the Atlantic and the woodland in the North-west. Arranged as it was, with the forest on the land that was close to the market for its products, forest destruction was at first a necessity and later became a habit. Fire, the good servant in clearing the land, ran rampant carrying forest devastation far beyond the necessities of the people."

> "The earlier settlers, coming from Europe were used to forest conservation. They had practiced it in the countries from which they came. Forest destruction was to them a new thing; but the forests were so vast that they thought there could never be a scarcity of wood, and they reasoned that the more the forest was destroyed, the more the agricultural interests of the country would be advanced. But the modern settler sees the forest in a different light, especially so in the great North-west where on the wide prairie wood is a luxury. To him forest conservation is the necessity, not forest destruction. He has no delight in the devastation of the woods by fire, and he hails with hope legislation and management tending to improve the condition of the forest. He sees clearly that his comfort and his agricultural interests are closely dependent upon a plentiful supply of wood."

> "The country is so vast and the demand for wood so great, it is a tremendous problem to so manage the forests that this demand may be met continuously. Hope seems to lie in the creation of forest reserves, and the policy of setting aside land to be used as forest reserves is now pretty well established by the Dominion Government."

His remarks about the conservationist attitude of the modern settlers did not appear to be borne out by the high incidence of settler-caused fires. These comments may have been written before he realized the impact of the major wave of settlement which was in progress.

Knechtel (1908b) also outlined the intent of the Dominion forest reserves:

> "..... to preserve and produce a perpetual supply of timber for the people of the prairie, the homesteaders' needs being considered of first importance. They are not intended to furnish wood for the lumber trade. Hence the policy of the Department is favorable to small mills rather than to large ones which need large tracts of forest and manufacture lumber beyond the needs of the settlers. To furnish wood is primarily the purpose of Parliament in the creation of the reserves. To be sure, our legislators are not unmindful of other blessings of the forests. They are well aware that forests feed springs, prevent floods, hinder erosion, shelter from storms, give health and recreation, protect game and fish, and give the country aesthetic features. However, the Dominion Forest Reserve policy has for its motto, 'Seek ye first the production of wood and its right use and all these other things will be added unto it.'"

The description was not quite in accord with previous statements made in the House of Commons, but probably reflects a working policy as practiced by those in charge of the Forestry Branch.

Fiscal support for fire control at this point, and in general hereafter, was in large measure reactive. For example, Campbell (Canada 1910a) reported a serious fire in the valley of the Spray River in the Rocky Mountains Park which burnt about three million feet of timber. He then added that "a more efficient patrol of the park is being provided for during the coming season." The report for the following year (Canada 1911a) showed that the number of fire rangers in Alberta was increased by 11, from 34 to 45. This incremental increase in support is evident throughout this history, and particularly noticeable following years in which greater areas than average were burned.

The nature of the fire problem was presented in statistical form in 1909 (Canada 1911a) for the first time. A total of 1,134 fires was reported of which 486 were on Dominion lands including the Railway Belt in British Columbia, 489 in B.C. outside the

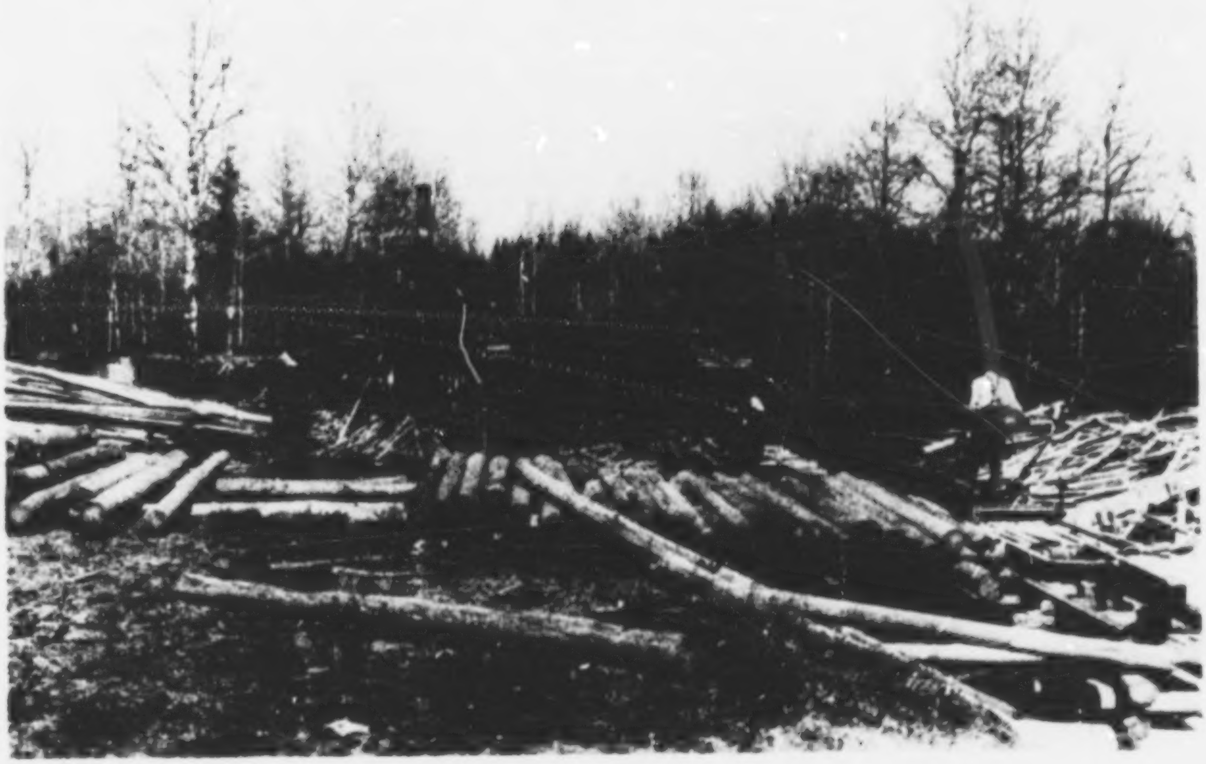


Figure 33. The forest reserves provided timber to small local mills. (Alberta ENR)

Railway Belt, plus 66 in New Brunswick and 93 in Nova Scotia. Causes of those 1,134 fires were listed as follows.

Cause	Number of Fires
railroads	202
settlers	177
campers and travellers	145
hunters, prospecters and lumbermen	32
lightning and natural combustion	63
old fires and cutover land	24
Indians	10
sundries	2
causes unknown	479

The large number of fires of unknown origin is probably a reflection of the scarcity of staff to undertake investigation. The prevailing problems of railroads, settlers and campers certainly stand out. A comment was added that all these totals were small, as there were immense areas of forest land beyond the reach of the fire protective organization. MacMillan (1909b) prepared a bulletin containing the first description of forest fires in Canada, covering the year 1908. Although it was a relatively fire-free year, he cautioned that fires had occurred in the past and would certainly recur, especially with settlement.

Knechtel (Canada 1911a) reported attending a meeting of the Western Canada Irrigation Association at Lethbridge in May 1909, at which a resolution was passed urging the establishment of a forest reserve on the eastern slope of the Rocky Mountains. He also reported that through the Railway Commission they were still trying to arrange inspection of locomotives to check the possibility of defective fire-prevention equipment, but with no success as yet.

Knechtel, the inspector of forest reserves, reported one full-time forest ranger on forest reserves in Alberta in 1909, James Ferguson at Cypress Hills (Canada 1911a). The forest ranger was permitted to employ help as required. The ranger was paid at a salary of $75 per month and had to provide his own horse. Workmen were paid $2 per day, with board provided on fires. Fire rangers were employed as needed. W. Margach, the chief forest ranger at Calgary, reported 12 mounted rangers employed in his district - but only for the months of April and May before vegetation started to grow, and in August to October which was a very dry period. The average remuneration was $273.33 for the season, with no allowance for board or for their horses. Margach expressed concern about the low salary and lack of permanent employment which created difficulties in recruiting and holding the better men. The seasonal staff was responsible for the protection of 9,000 square miles.

In the administration of the forest reserves, fire was a priority responsibility. Knechtel reported that all other work on the forest reserves had been held in subservience to that of guarding the forest against fire. During danger periods fire rangers were patrolling constantly looking for fire, and posting notices.

By order-in-council, a reserve of approximately three million acres was made on the eastern slope of the Rocky Mountains, in addition to the Rocky Mountains Park, Jasper Park and Kootenay Lakes reserves. Campbell (Canada 1911a) commented that the combined area of these reserves was one of the most important in the whole of the western provinces as it is a timber area lying alongside a prairie country hundreds of miles in extent, and almost devoid of trees. The reserve forms the watershed for the river systems which water the great plains to the east. He added that a large part of that watershed had suffered severely by fire and that proper protection from fire would go far toward re-establishing the forest.

A second bulletin on forest fires in Canada published in 1910 (MacMillan and Gutches 1910) provided a more comprehensive review of forest fires, leading off with the statement:

> "The loss which Canada has suffered from forest fires during the past century is beyond comprehension. The actual extent of the waste is hard to ascertain, but the data given below will show in a general manner the degree to which the wealth of the country has suffered through the burning of timber."

They reviewed the situation which first settlers in Canada encountered, and traced the slow change in attitude from one of fighting the forest to one of conservation. They cited two causes which brought about that change in public attitude towards timberlands: first, they had discovered that Canada was never so heavily timbered as was generally supposed, and second, the unfortunate fact that of the timber which originally covered the land, far more than half had been destroyed by fire. They reviewed the major fire causes, first of which was railways. Requirements suggested were patrols on operating lines, inspection of locomotives, construction and maintenance of fireguards, enforcement of existing laws, and greater responsibility of the railways to support fire prevention activities. The second was settlers clearing land, an activity which was covered by provincial legislation. Except for the value of having to obtain fire permits as was required in British Columbia, public education was seen as more valuable than further legislation. Circulation of pamphlets and information on safe burning practices was recommended. Lumbermen were seen as being directly responsible for very few fires, except in British Columbia where the fires were primarily related to logging slash. The question of forest fires and railways was elaborated on by Campbell (1911) in a subsequent bulletin.

In May 1909 the Parliament of Canada passed "An Act to Establish a Commission for the Conservation of Natural Resources" which established the Commission of Conservation (Canada 1910b).

Johnstone (1973) stated that the formation of the commission could be traced to the Canadian Forestry Convention of 1906 and Laurier's concluding admonition: "...... our labours are just commencing.....". It was logical, he felt, that Canada should accept an American invitation to attend the North American Conservation Conference in Washington in 1909. A concluding declaration included a call for the setting up of a commission of conservation in each of the participating countries. Canada responded promptly.

Some comments on the initial activities of the commission are appropriate here as they provide further insights into the fire concerns and background to the policies which followed. Section 10 of the act stated:

> "It shall be the duty of the Commission to take into consideration all questions which may be brought to its notice relating to the conservation and better utilization of the natural resources of Canada, to make such inventories, collect and disseminate such information, conduct such investigations inside and outside of Canada, and frame such recommendations as seem conducive to the accomplishment of that end."

Clifford Sifton, former minister of the Interior, was appointed chairman. In his opening remarks to the first meeting of the commission he stated:

> "We have met to-day under the mandate of the Parliament of Canada for the purpose of inaugurating a work which is fraught with most important consequences to the people, not only of our own generation, but of the future. Parliament has deemed it wise to constitute this Commission for the purpose of promoting the conservation of our natural resources. The Bill was introduced by the Government; it passed both Houses of Parliament without a division, and may therefore be taken to represent the unanimous view of all parties in the House of Commons and the Senate."

He explained that membership included three members of the federal government and one member of the government of each province, members from universities, and a number from resource-based industries, particularly forestry. Members from Alberta included Frank Oliver, then minister of the Interior, and Henry Marshall Tory, president of the University of Alberta. Included on the committee on forests were Dr. B. E. Fernow of the University of Toronto and two lumbermen.

Sifton described (Canada 1910b) the commission as neither an executive nor an administrative body. It had authority to take into consideration every subject which might be regarded as related to the conservation of natural resources, but the result of that consideration was to be advisory only.

> "In a sentence, the Commission is a body constituted for the purpose of collecting exact information, deliberating upon, digesting and assimilating this information so as to render it of practical benefit to the country, and for the purpose of advising upon all questions of policy that may arise in reference to the actual administration of the natural resources where the question of their effective conservation and economical use is concerned."

The problem, as Sifton outlined at that time, was that the country was large and diverse, and the ability of a minister to make proper decisions was seriously limited by the complexity of the questions and scarcity of information. The intention of the commission was to provide a service in collecting information, assessing it, and presenting objective, studied recommendations.

In his review of forest resources, Sifton cited some advances, such as the employment of educated foresters, the establishment of chairs of forestry at universities and the work of the Canadian Forestry Association in arousing public interest. Yet, he said the work was only beginning in the conservation of this important natural resource. He referred to what he called the outstanding and important fact that in the last 10 years

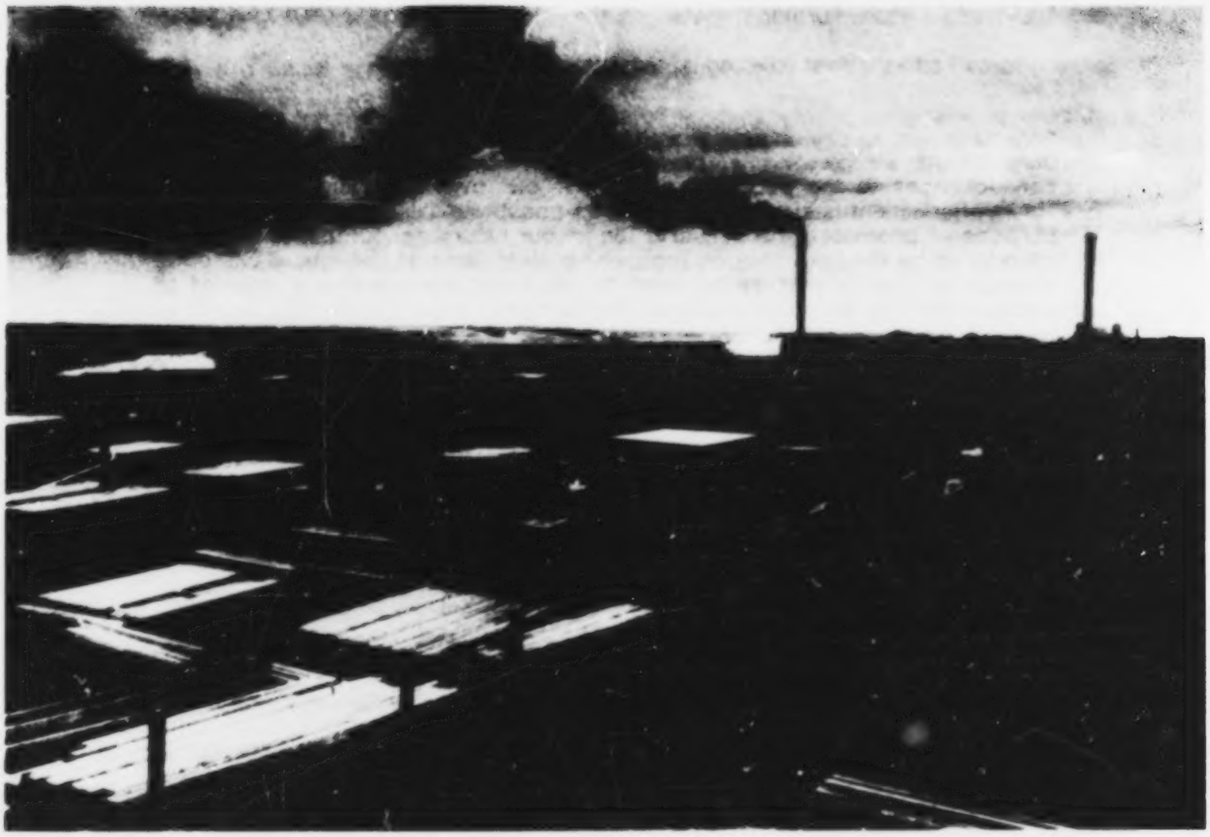


Figure 34. Logs from the Bow River and western tributaries were river driven to supply the large Eau Claire sawmill in Calgary. (Public Archives Canada PA 13337)

enlightened public opinion had clearly grasped the necessity for the conservation of the forests, and that public opinion could be relied upon to be unanimous in support of forest conservation. However, he emphasized that the great foe of the forest was fire. Although a good deal had been done in the way of fire protection much more was required. The devastation of forests by fire was going on at a rate that was "simply appalling". He doubted that one person in 10,000 realized the actual meaning of even the fragmentary information which they had on the subject. While he recognized the importance of other forestry measures, such as tree planting, renewing the white pine forest, and the pulpwood question, he reiterated:

> ".....but the all-essential thing in regard to the question of forests is to get the community awakened up to the idea that an absolutely new departure must be made and at any cost the destruction of forests by fire must be stopped."

He referred to some practical steps which could be taken at once and which were of the utmost immediate importance in this connection. For example, after the last session of Parliament the select standing committee on forests and waterways investigated the question of the flow of water from the east slope of the Rocky Mountains through the plains of Alberta and Saskatchewan. It was shown in evidence before the committee that to preserve the water supply of those provinces, it was necessary to prevent the destruction of timber on the east slopes. He said that it was shown that the destruction of the timber would mean the disappearance of the regular water supply of those provinces, the agricultural production of which was the "pride and the hope of Canada".

It was further shown that by proper steps not only could the present available supply of water be conserved, but that it could be greatly increased. Accordingly, the committee recommended that practically the whole of the east slopes still under control of the government be formed into a permanent forest reserve, be placed in charge of a competent warden with a sufficient staff of assistants, and governed by careful and stringent regulations. Sifton stated that he had been informed that the government had decided to act upon the report of the committee and that a bill was in preparation.

At that same first 1909 meeting of the Commission of Conservation (Canada 1910b) Dr. B. E. Fernow, Dean of the Faculty of Forestry at the University of Toronto, read a long paper dealing with scientific forestry in Europe and its value and applicability in Canada. One of the major points he emphasized was that public ownership and administration of forest lands for the public interest were essential and indispensible. The newly-formed committee on forests presented a brief report at the end of the session refering to three great requisites: prevention of forest fires, systematic cutting on the part of lumbermen, and reforestation of burned-over areas unsuited for agriculture.

On the prairies the potential for large fires remained. The fall of 1909 was warm and dry, and the prairies supported luxuriant cured vegetation. Roder (1964) described how "The Great Fire of 1909" began when a rising west wind fanned a fire lit for a fire break, creating a fast-spreading prairie fire. The area ultimately affected was estimated at 12 - 18 million acres, bounded roughly by the Red Deer River on the south as far east as Empress, Sullivan Lake and Bullpound Creek on the west, present-day highway 13-14 on the north, and highway 44 on the east. The fire may have extended further. It was stopped by determined independent actions by settlers, many of whom lost homes, buildings, and livestock. At least one fatality was reported. The loss of winter feed worked an added hardship which was compounded the following year by the dry conditions of 1910. Hon. Frank Oliver, minister of Agriculture at that time, was given credit for enhancing the provision of aid.

Two new staff appointments noted in the report of the Department of the Interior for 1910 (Canada 1911a), were apparently the first from Canadian universities. They included G. H. Edgecombe from the University of Toronto, and Peter Z. Caverhill from the University of New Brunswick. Also hired were G. A. Cromie from Yale and H. C. Wallin from the Swedish School of Forestry in Stockholm. Surveys for the forest reserves continued and additional lands were recommended for inclusion. A new bill relating to forest reserves was prepared to be presented to Parliament.

Fire notices giving warning of the danger of fire were printed in English, French, German, Icelandic, Galician, Cree, Chipewyan, Norwegian, Russian, Hungarian, Hindu, Japanese and Chinese. Thirty thousand were distributed and posted. In addition, 200,000 copies of a small pamphlet explaining the danger of fire, the chief provisions of the Fire Act and the best method of fighting fire were distributed in English, French, Ruthenian, German, Norwegian, Hungarian, Swedish and Russian. A copy of this pamphlet, reproduced from MacMillan and Gutches (1910), is included in the Appendix. This action clearly reflects the nature of immigration and settlement in the west.

The increased professional staffing combined with experience and information gained from the forest surveys evidently helped in the preparation of fire control plans. H.R. MacMillan (Canada 1911a) in his portion of the Forestry Branch report summed up the essence of fire control:

> "The measures adopted to protect the forests from fire are now generally understood. They are the removal by education or legislation adequately enforced of the causes of fires, the organization of a patrol to find and extinguish such fires which will inevitably start, and the improvement and organization of the forest areas so as to render most efficient the efforts of fire fighters and to minimize the chances of any fires getting beyond control."

These views were reinforced, and an additional problem outlined, in the annual reports of the North West Mounted Police at about that time. Although enforcement of the prairie fires ordinance was improving, the results were variable. D'Arcy Strickland in charge of the Fort Saskatchewan Division regretted that the number of fires in 1905 was greatly in excess of the previous year (Canada 1906c). His division obtained 40 convictions out of 50 prosecutions, third in numbers of convictions only after common assault (69) and drunk and disorderly conduct (44). He stated that carelessness was the major cause of fires, but felt that the settlers were learning. His replacement, A.E. Ross, reported frequent fires in 1908 (Canada 1909b) owing to the long burning period between snowmelt and green-up, and referred to more than 20 convictions. But he outlined a major problem:

> "..... so long as justices of the peace continue to take a lenient view of this offence, and fines ranging from five to twenty-five dollars only are held to be sufficient penalty for carelessness, often resulting in the loss of much property, I feel that prairie fires will continue to be more numerous than they should be. It is much cheaper for a man who is burning stubble or brush to take chances of the fire getting away from him, and being convicted to pay a fine of five dollars in consequences, than to employ sufficient help to prevent the possibilities of loss to others."

Later, A. R. Cuthbert, officer commanding the same division outlined problems in supplementary enforcement in his report for 1910 as well as with penalties (Canada 1911b).

> "If the many fire guardians residing in all parts of the country took a little more interest in the matter, and the justices of the peace could be induced to make the penalty fit the offence, the repeated damages and loss from this cause would, in my opinion, be greatly reduced. The number of convictions obtained by us up to the present this year under the Prairie Fire Ordinance is eighty-two (82)."

Some of the information provided by other government agencies apparently did not appreciably help the settler fire situation, either. A bulletin from the Railway Lands Branch (Grisdale 1913) recommended with respect to stubble burning: ".....Burn stubble on the first warm windy day in the spring."

However, succeeding annual reports referred to prairie fires with decreasing frequency. A combination of enforcement and penalties, and fuel breaks in the form of roads and cleared land undoubtedly reduced the problem in the Fort Saskatchewan - Edmonton region at this time. A considerable amount of control over prairie fires had also evidently been achieved in southern Alberta in the early 1900s, according to Nelson (1973). But fires accompanied people wherever they went, and this problem was to move on to new forested areas being cleared for agriculture, persisting for decades to follow.

Administrative problems began to emerge as the Forestry Branch grew. Campbell, Superintendent of Forestry (Canada 1911a) remarked that the increase in number and area of the forest reserves and other developments made it necessary to consider the organization and administration of the forestry work to provide an adequate and efficient organization established on the right lines to meet the conditions of any particular unit. He went on to explain:

> "Protection from fire and enforcement of laws and regulations are the first things to be provided for, and this means a sufficient and efficient of staff of forest rangers. The experiences with forest fires last year, both in the United States and in Canada, emphasize strongly the necessity for such a staff and there is no question whatever that the success of a forest administration rests to a very large degree on the intelligence, the faithfulness and the practicability of the forest ranging staff. The work of a forest ranger is arduous and requires a man of energy and strong physique. The qualifications for appointment as a forest ranger should be as follows:
>
> 1. He should be between the ages of twenty-five and forty.
> 2. He should be sober, industrious and physically fit.
> 3. He should be able to read and write and have sufficient knowledge of arithmetic to transact the ordinary business of the reserves, such as calculating the dues on permits.
> 4. He should be able to handle horses and to ride.
> 5. He should be experienced in work in the woods, should be accustomed to handling an axe and should be able to estimate and scale timber.
> 6. He should be able to handle a gang of fire fighters or men working on roads or trails.
>
> "To ensure these qualifications some test or standard of examination will be necessary, and in the forest service of the United States it was not until a regular plan of examination, in which, however, large credit is given to previous experience, was adopted for the appointment of rangers that the service was placed on an efficient basis."

> "The district which one ranger can protect will depend on conditions on the ground. The United States forest service consider that there should be an average of one ranger for each one hundred square miles. To equip the Dominion forest reserves with rangers as fully as this standard would demand would mean a staff of 250 rangers. Of permanent rangers now on the Dominion reserves, there are 19, and though this number was increased by temporary appointments during seasons of danger or necessity it is still only a fraction of the force required."
>
> "Mechanical means of assistance will be required to make the rangers' work effective, such as lookout stations to give views over large extents of forest, roads and trails to give quick and easy access in case of fire, means of communication such as telephone lines, and in some cases the clearing of special fire guards."
>
> "The experience both in Canada and in United States in the dry seasons of 1910 demonstrated the absolute necessity both of a sufficient number of rangers and of all the mechanical aids that can be provided."

The reactive or responsive nature of development of fire control capability is evident here again where deficiencies are highlighted during years of serious fire activity. Numbers of men and their capabilities remained problems, along with the auxiliary support needed.

A. Knechtel, inspector of forest reserves, (Canada 1911a) elaborated on the reorganization proposed for the Rocky Mountains Forest Reserve. These represented major changes to the system.

> "Since the territory has been placed under forest reserve management the protective work has been reorganized. Heretofore the rangers were employed only temporarily during danger periods. When the danger seemed to be over they were discharged and when danger reappeared they were re-engaged. Now the reserve is blocked off into large blocks having each a frontage towards the settlement of about 30 miles. A ranger is employed by the month upon each block and he is held responsible for its protection. During the danger periods he keeps constantly on patrol. When there is little danger he employs his time in clearing existing trails, making new trails, ploughing fireguards, marking and cutting out the boundary line of the reserve, and guarding the reserve against trespass."
>
> "The rangers selected for the Rocky Mountains forest reserve were selected on the qualification of being strong, sober, industrious men used to logging operations. They can locate and estimate timber, scale timber, do a logging job, run a sawmill, build log houses, organize and manage a crew of fire fighters, and have education enough to report intelligently to the Department."
>
> "At convenient points on the reserve, close to main trails, the rangers are instructed to build caches for fire fighting tools. These will be built of logs. The inside measurements will be 14 feet by 16 feet by 8 feet. The roof will be made of boards covered with sheeting and earth. The cache will have a good floor and door, and a small window with heavy board shutter. The cache equipment will be a cook stove with necessary utensils, a bed for the ranger, and the following tools for fighting fire:

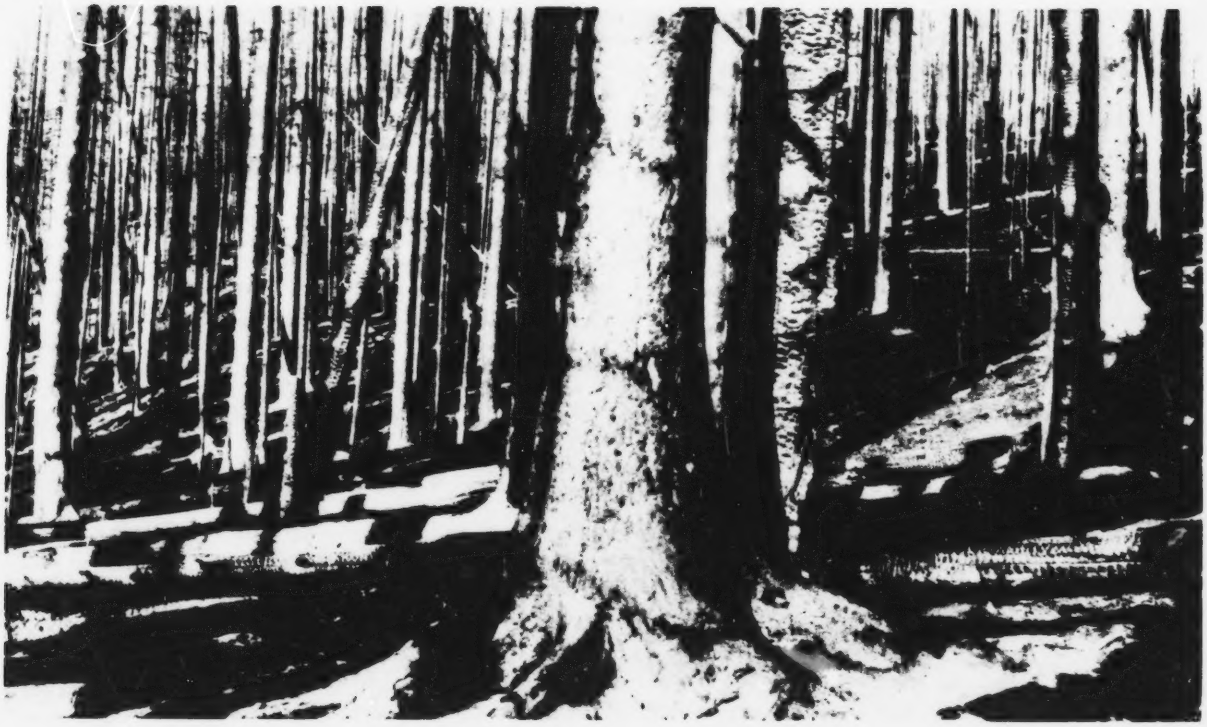


Figure 35. Timber in the High River valley burned in 1910. (Public Archives Canada PA 46072)

> - 3 long-handled square point shovels.
> - 12 long-handled round point shovels.
> - 9 axes.
> - 12 grubhoes.
> - 6 galvanized pails.
> - 6 brooms.
>
> "Where ploughed fire guards are to be made a heavy brush-breaking plough will be added to the above equipment."
>
> "Telephone connection is to be established between the caches and the settlements, so that when fire occurs assistance can be promptly obtained to put it under control."

G. H. Edgecombe, in his report to Campbell on the boundary survey (Canada 1911a), also had suggestions for reorganization based on his observations of the 1910 fire season:

> "To witness such fires as occurred this summer, it is apparent that, for efficiency, the fire rangers should live on the reserve and that they are too few and their districts too large. If the rangers' headquarters were located on the reserve and in communication with the principal trails, travellers would be under a degree of supervision. The districts should be of such a size that a patrol could be made of it within a certain number of days, say for instance, five. Lookout stations could be located on commanding hills and trails cut to them. Thus the supervision of a large tract could be undertaken. The ranger should become familiar with his district and divide it off by fire guards, by trails, and by natural barriers, such as streams and rocky ridges, so that a fire may be confined to one of these smaller areas.
>
> "A much larger district could be apportioned in the interior districts, traversed only by prospectors and a few others, than along the railways and eastern slopes where travellers are most frequent, and by which entry is made to the interior."
>
> "The game wardens in co-operation with the rangers could assist greatly in warning campers and keeping them under supervision."

These proposals appeared to have largely set the stage for subsequent developments in management of the forest reserves, as brought out in succeeding annual reports. The qualifications recommended for hiring of forest rangers sounded idealistic in some respects, but reflected an admirable objective and, in part, set the stage for later ranger training programs. Campbell quoted an extract from a then-recent article in the *Saturday Evening Post* about one of the Dominion fire rangers. It is an interesting, although colorful, account and is included in the Appendix.

A new Act Respecting Forest Reserves and Parks was passed in Parliament in 1911. Frank Oliver, minister of the Interior, spoke to the first reading of the bill on Jan.

Figure 36. Testing the phone line. (Alberta ENR)

13, 1911 (Canada 1911c). In his introduction he referred to the 1906 Forest Reserves Act, and the separate act respecting the Rocky Mountains Park which had been passed earlier. He outlined the several reasons for this new bill, listing experience since 1906, that parts of some of the reserves should be designated parks, that a number of new reserves which had been established by order-in-council should now be given the protection of an act, and some reserves needed boundary adjustments or reduction in area. In particular, this bill included a forest reserve covering the east slope of the Rocky Mountains which had earlier been set apart by order-in-council since the eastern boundary had not been defined, but that field work had now been done as far north as the Athabasca River.

When Frank Oliver spoke to the second reading of Bill No. 85 respecting Forest Reserves and Parks in the House of Commons April 28, 1911 (Canada 1911c), he further explained:

> "The major portion of the provisions of this Bill are already contained in the Forest Reserves Act. The most important differences between the Bill and the Act are that provision is made for placing all present forest and park reservations under the provisions of the Forest Reserves Act, and then setting apart, within these forest reservations, park reservations with regard to which the regulations look to the enjoyment by the people of the natural advantages and beauties of those particular sections of the reserves, while the regulations regarding the remainder of the forest reserves look rather to the exclusion of people from them."

> ".....It sets apart by legislation the Rocky Mountains Park Reserve, extending along the eastern slope of the Rocky Mountains from the boundary until it is crossed by the boundary between British Columbia and Alberta."

> ".....The Conservation Commission recommended the setting apart of the reserve on the whole of the eastern slope of the Rocky Mountains, and the Bill is in accordance with that recommendation."

> ".....In setting apart the reservation we were guided by the principle that land at an elevation of 4,000 feet and over was not suitable for agricultural purposes, though it could still be used for grazing, because the grazing right does not involve alienation of the surface."

In response to a question whether or not it was intended to dispose of the timber on the reserves, Oliver replied:

> "It is not open to the ordinary demand for timber, but the timber is to be disposed of at the option and on the responsibility of the department when it is mature. The idea is that the timber shall be administered with a view to preservation reproduction rather to profit but it is not at all intended that the

timber shall not be used."

The distinction between parks and forest reserves was interesting, providing for enjoyment by people in parks and exclusion of people on the reserves. His comment about exclusion of people from the reserves may have been made only relative to the emphasis on timber production - especially in light of a previous statement about the desirability of having people on the reserves during the fire seasons. The questions about timber production on the forest reserves probably reflected confusion with park reserves since subsequent discussion made it clear that timber would be harvested in the forest reserves. In further discussion on May 9, 1911 Oliver stated:

> "The primary object is to conserve the sources of water supply by the protection and production, or reproduction, of timber or wood around the sources of the water supply..... We propose to utilize that land .....in this work of conserving the water supply, and at the same time to reproduce the timber growth for the benefit of the dwellers on the prairies surrounding these areas."

The minister was asked by a Arthur S. Goodeve whether he intended to appoint as forest rangers men having certain qualifications and technical training. Oliver responded:

> ".....What is wanted is a man who knows when a fire starts and knows how to stop it. If we can get such a man, who is willing to do the best that is in him, we are doing as well as it is possible to do. The country is getting good service from such men. Our difficulty is to find such men, even without any restriction......"

In response, Goodeve spoke of the developing forestry schools describing the emphasis on necessary educational backgrounds of prospective staff which would later emerge:

> "Nearly all the universities in the country have forestry departments, and are turning out trained foresters. It would be a great advantage to the government to have as forest rangers men who have some knowledge and training in the science of forestry. A man may have ever so good an intention, he may be honest and all that, and yet be of little service as a firefighter because of lack of training. In certain conditions in our forests, a man requires to have a considerable amount of knowledge to be a good fire fighter."

Concerns were expressed about fires on the reserves. An F.L. Schaffner (Canada 1911c) commented that one of the most difficult things to contend with in connection with the reserves was their protection from fire, and that there should be some better methods of protecting them. Schaffner also expressed the belief that cattle raising on the reserves would be a great benefit to the farmers, and at the same time help in fire protection by removing fuels. Oliver mentioned that the point had been made earlier, but that there was also concern over possible injury to young tree growth by cattle. He advised that an experiment was to be started to try to determine the effects. Concern was also expressed about railway-caused fires, and there seemed to be general agreement that the railway companies should bear a fair share of the burden of fire protection. In response to that, reference was made to a proposed clause in the Railway Act. As before, the subject was evidently of great interest to the House, debate covering 68 columns in Hansard. The bill was assented to on May 19, 1911.

6.2 Building the Organization 1911-1918

In the annual report of the Department of Interior for 1911 (Canada 1912a), W.W. Cory, the deputy minister, referred to the great damage done by forest fires in the West in 1910, commenting that it emphasized the necessity for perfecting the protective service in every way possible. Campbell reported that the number of fire rangers in Alberta had been increased to 46 that year. Campbell expressed particular concerns over the recruitment of foresters since his branch covered a variety of work, all of which required development as rapidly as it could be undertaken.

> "Up to the present time one difficulty in the way of rapid development has been the lack in Canada of men who have had technical training in forestry. Little progress can be made without a fair proportion of men in the service who have had the advantage of the study of forestry methods from the scientific standpoint, and who, therefore, understand the lines upon which advancement must be made and the ultimate purposes which administration must have in view. The difficulty is now being overcome by the forestry schools established in the Dominion, which are graduating each year a number of men who should fill this gap in the administration. The Forestry Branch of this department has so far furnished the chief opening for employment of these graduates, and there are now on the staff five graduates from the Forest School of the University of Toronto, three graduates of the Forest School of the University of New Brunswick, and seven graduates of Foreign Schools, most of them, however, Canadians who were employed before the Forest Schools of Canada were established."

Campbell went on to explain how six field survey parties had been detailed to explore public lands to determine the extent and present conditions of the forests, and to try to distinguish between agricultural lands and lands which should be retained in forest production - the start of studies which have been continued to the present.

Campbell also reiterated the problem of protection of the remote and extensive northern forest, and the need to improve fire ranging. He deplored the lack of interest in protection by the lumbermen in the West and said that he would welcome a scheme for

Figure 37. Rangers on early surveys. (Alberta ENR)

cooperation by them.

The questions of costs of administration and the need for developing an infrastructure were addressed. Campbell's remarks, reproduced here, suggest that in spite of expressed interest in the House there was still a problem in obtaining adequate support to do the job which was needed.

> "The organization of the permanent forest reserves so as to make them fire-proof and to provide proper management is work that requires a good permanent staff and a system of permanent improvements, such as forest-ranger stations, trails, roads, bridges, telephone lines, etc. In my report of last year I called attention to the necessity for choosing the forest-ranger staff on a basis of special qualifications for the work, and outlined the qualifications necessary. As the forest-ranger staff is the ground work of all the organization for handling the reserves, the choice of the right kind of men is a factor of the greatest moment. The improvement work above referred to, as required on the reserves, is necessary if there is to be an effective protection and management, and, as all this work is yet to be done, it will be seen that there must be a large initial expenditure which cannot be expected to be returned by the forest immediately. The work on permanent improvements is in fact a capital expenditure and should be considered as such. A proper system of roads, trails, buildings, etc. throughout the reserves will cost a large amount of money, the incidence of which should be distributed through a series of years. These works, once done, will require a comparatively small expenditure for maintenance in addition to such work as may be done by the permanent ranger staff. So long, however, as this work remains undone, the forests are exposed to danger which cannot be coped with in seasons of light rainfall, and which renders much of the expenditure that is being made for fire patrol finally nugatory, as the history of the dry years so eloquently testifies."

> "It must be expected, therefore, that the expenditure on the forests for a considerable period will exceed the revenues. A permanent policy, in the present condition of our forests, cannot be worked out on any other expectation. The waste of years of unchecked fires cannot be repaired in a day. When the fire danger has been eliminated and a proper system of cutting timber introduced, the condition of the forests will steadily improve, and finally will reach a stage where a sustained annual yield can be obtained which will give revenue sufficient to cover the costs of administration and furnish as reasonable a profit as a government would be expected to obtain."

Recommendation was made that the Swan Hills country and the Marten Mountain region be set aside as forest reserves. D. Roy Cameron,[6] who conducted the survey, pointed out that they were unsuitable for farming and that in addition to providing a future timber supply the forests regulated the water supply of the rivers and prevented eroding their banks. He referred to problems on the Lesser Slave River of alternating conditions of very low and very high water proving very harmful to navigation, along with problems of driftwood from eroding banks during storms and rapid siltation of channels of the rivers.

---

[6] Cameron started work with the Forestry Branch in the west during the 1906 field season and became head of the CFS in 1936 (Johnstone 1973).

The Lesser Slave River formed an important navigation link from Edmonton to the Peace River country and therefore was of some concern. Whether or not fire was the leading contributor to the erosion problem is an open question. Geology and climatic variations were probably a major cause.

Another forester, E. G. McDougall, inspecting the Porcupine Hills in southern Alberta, recommended their inclusion in the forest reserve. He referred to hillsides partly covered with a scattered growth of Douglas-fir, spruce and pine which occasionally formed merchantable stands. He stated that the timbered area had been much reduced in recent years by logging operations and fires, and that the hills had long been a chief source of timber supply to the adjacent country as well as forming headwaters for a number of important streams used for irrigation. Again, fire was seen as undesirable and protection advocated - a controversy which has continued to the present in view of the importance of that area as a winter range for elk, and summer cattle range for local ranches. McDougall concluded:

> ".....there is every reason to believe that, with the assistance of the frequent grass fires, the prairie has been gaining on the forest for a long period; and that, unless the fires can be effectively checked, the day is not far distant when the forest cover will have vanished completely from the Porcupine Hills."

The report of the director of forestry (Canada 1912a) went on to explain that the organization of the reserves had not been altogether satisfactory, partly because there was not enough money to provide the facilities necessary to have the rangers live on their districts or to provide for quick communications. A more adequate appropriation had been provided for the coming year, possibly as a consequence of the 1910 fire season. The plan was outlined as follows:

> "The form of organization adopted is to have each reserve divided into permanent ranger-districts with a permanent ranger in charge who will be required to live in his district in a house to be provided by the department. He will be required to patrol his district, to protect it from fire and trespass, to open up trails and roads through it, and to keep in order any telephone lines that may connect his district with others. He will also look after any lumbering operations carried on in his district so as to see that the regulations of the reserves are being properly observed and to check up the cut. He will report to and receive instructions from the supervisor, who will be in charge of the reserve."

On the larger reserves there was also to be a forest assistant who would be a technically trained man, a graduate of a forest school, and who would act as a technical

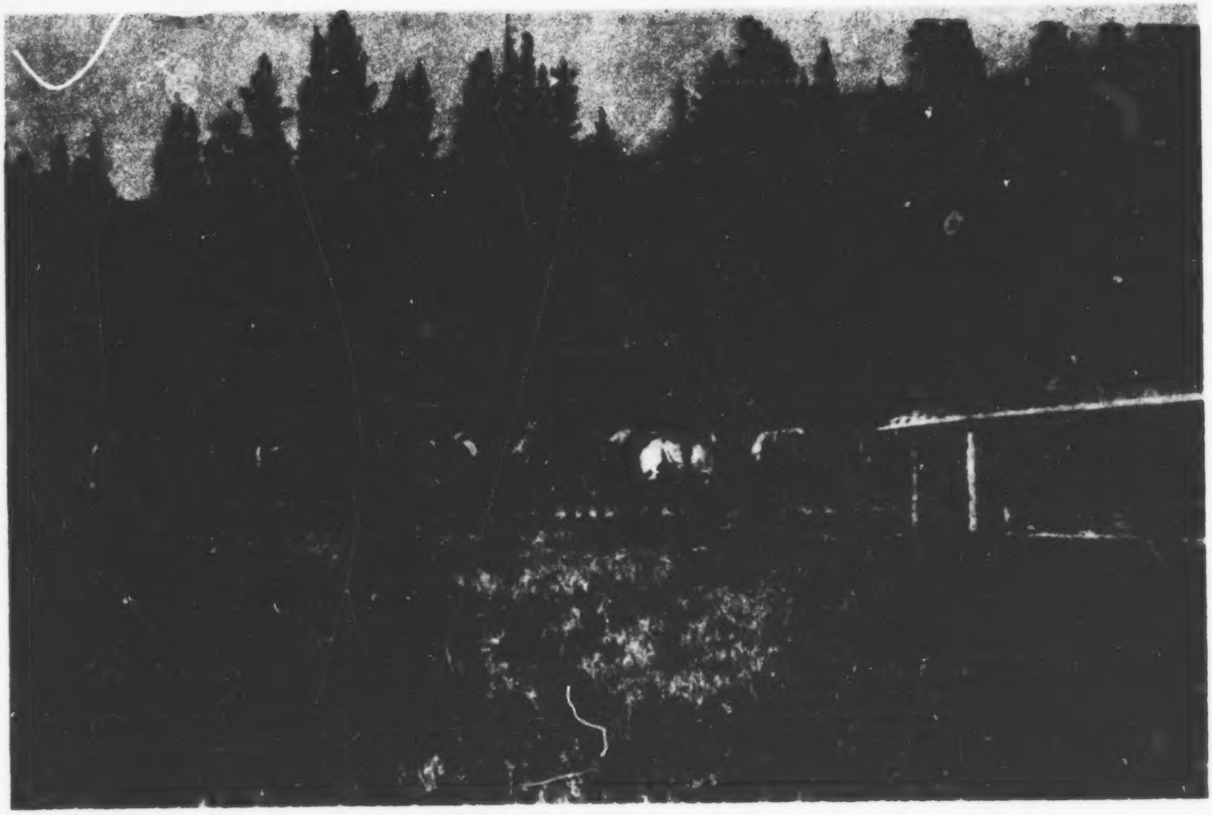


Figure 38. Horses were the major means for moving men and supplies during this period. (Alberta ENR)

advisor to the supervisor and work under his instructions. A technically trained man would also be employed as an inspector of forest reserves.

Letellier O'Connor, an inspector, reported to Campbell in December 1911 (Canada 1912a) about his work in more thoroughly organizing the fire-ranging service in northern Alberta. He cited the problem of holdover fires, some of which smouldered over winter, others caused by fires left burning by hunters and travellers in the winter time. As a consequence, he recommended that fire rangers be put on a district early in March and that they be continued in their work until the first real snow in the fall or until November 1. He also recommended the construction of boats suitable for navigation of the Lesser Slave lake and river, and the Athabasca and Peace rivers. These would be used for patrol and as a means for moving fire crews.

O'Connor described a jurisdictional problem which was subsequently to receive attention, but not before frictions developed.

> "With regard to the right of our fire-rangers to call out people to fight fires, the provincial authorities claim that our men have not this right, and while not wishing to enter into the merits of this question, I beg to suggest that steps be taken to have their powers clearly defined before someone makes a test case of the same. This I am expecting, as most of the new settlers are not very willing to go out to fight fires, and should it be decided that our fire-rangers have no authority to call out people, their usefulness would be greatly curtailed. I also beg to recommend that fire-rangers be given the power of constables."

The report of Abraham Knechtel, inspector of forest reserves, (Canada 1912a) gave some insights into the work of the staff on forest reserves during this developmental stage. Patrols averaged 3,489 miles per ranger during the fire season in 1911. A total of 2,468 fire notices were posted, 129 miles of fireguards burned, 188 miles of guards plowed, 859 miles of trails constructed, 99 miles of roads built, 474 miles of boundary located and 18 cabins built. The cabins were of log, 14 by 16 ft in dimension, and located 30 miles apart, representing "one good day's journey" by horse. This record of accomplishment for 18 permanent rangers and 38 temporary rangers is impressive, even if there may have been additional unreported laborers.

By 1912 the Commission of Conservation reported (Canada 1912b) that field investigations in 1910 showed that about 34 percent of the forest fires for which the causes were known were due to railway locomotives. As a consequence, the commission recommended legislation be passed penalizing the railways for forest fires set by them. A

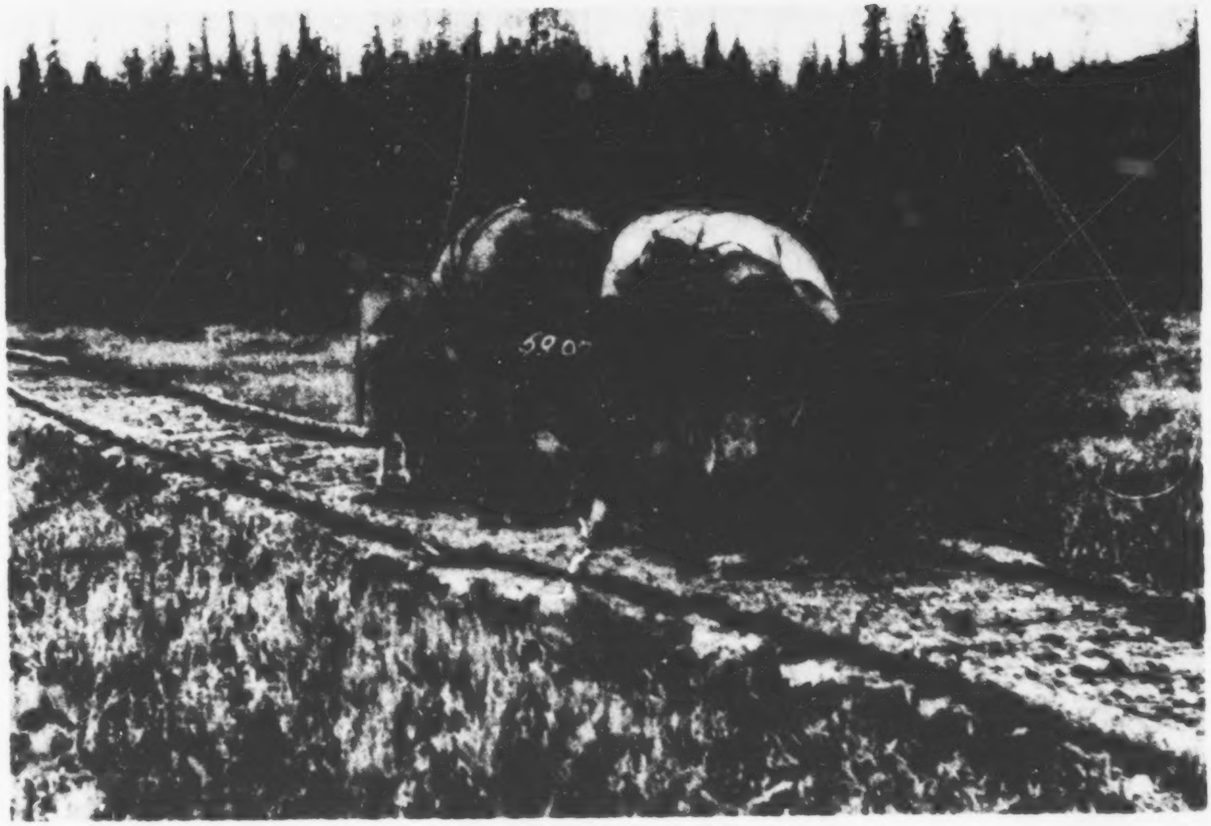


Figure 39. Many miles of corduroy were laid to improve pack trails across soft ground. (Alberta ENR)

meeting of the chairman of the Commission of Conservation, the chairman of the Railway Commission, and the minister of Railways and Canals resulted in forest fire legislation which was subsequently passed by Parliament as an amendment to the Railway Act.

The new legislation empowered the Railway Commission to require companies to establish and maintain an efficient and competent staff of fire rangers provided with equipment for fighting or preventing fires from spreading. It also provided that a company could be required to maintain patrols on the railway lines. Further, it made the railway companies liable for damage caused on property by fires started by locomotives. The legislation placed a ceiling on claims for damage of $5,000, provided that the company could show it had used modern and efficient appliances, and was not otherwise guilty of any negligence.

In subsequent discussion of resolutions, the Commission of Conservation passed two that related to forestry. The first was for development of proper regulations under the amended Railway Act, and that Dr. B. E. Fernow be appointed to work with the chairman of the Railway Commission in drafting them. The second was in response to the presentation by R.H. Campbell that of $110,000 requested for the forest reserve that year he had received only $80,000. It was evident from the nature of discussion that the commission members felt strongly that additional support should be provided, and moved a resolution that an appropriation of not less than $110,000 be provided for forest protection in the Rocky Mountains Forest Reserve during the fiscal year of 1912-13.

Action on the railway resolution apparently was immediate following the January 1912 meeting of the Commission of Conservation. Leavitt (1913) printed a copy of an order of the board of railway commissioners issued May 22, 1912, related to fire prevention. The preamble to the order mentioned representations of the Commission of Conservation and the Canadian Forestry Association. The lengthy order provided for more thorough inspection of fire protective appliances and removal from service of defective equipment. Provisions required an immediate extinguishing of fires along the rights-of-way, improved definition of lignite coal to reduce use of the inferior grades which are more prone to start fires, enforcement of the requirement for construction of fireguards, regulation of burning of flammable debris along the rights-of-way, provision for forest or fire rangers to be maintained by the railway companies, partial relief from the requirements in the act where oil was used as a locomotive fuel, and the reporting and extinguishing of fire by regular railway employees. Leavitt (1915) reported encouraging results from better handling of the patrol, right-of-way clearing, and fire-guarding. His optimism was reflected in his comment:

> ".....The results secured have amply justified the efforts made, and show that the practically complete solution of the railway fire problem may be expected with the steady increase in efficiency of the inspection staff, made available under the co-operative arrangements in effect between the Board and the fire protective organizations of the Dominion and Provincial Governments, coupled with the natural increase in the efficiency of the fire protection work of the railways."

Another major event for which the Commission of Conservation deserved some credit was the Rocky Mountains Forest Reserve Act, support of which had been strongly urged on the government.

R.H. Campbell of the Forestry Branch of the Department of the Interior had been invited to speak to the Commission of Conservation about the Rocky Mountains Forest Reserve. He told the commission the reserve was established for the protection of the timber and, as a consequence, the protection of the water supply. Protection was the first question to be considered.

Although Campbell felt that the setting up of the forest reserve was important, he distinguished the setting apart of a reserve from the administration of it. He pointed out that while it was possible to set apart reserves until the whole country was covered with them, without provisions for their proper administration, they might as well not be created. For the cost of proper administration of a reserve he looked, perhaps unrealistically, to Germany and found the cost would be at least $1 per acre. He thought it unlikely that the government would grant $11 million to administer the Rocky Mountains Forest Reserve, since his modest request that year for an appropriation of just one cent per acre ($110,000) had had to be reduced. He noted that the U.S. Forest Service had asked for an appropriation of 2 cents per acre for all their forest reserves and had received virtually all that amount. Campbell also referred to the difference between dry and wet years. During wetter years, easier fire conditions led people to think the administration was in proper shape.

By the 1912-13 fiscal year, forest administration had evolved into two separate lines - one for the forest reserves, the other for the fire-ranging districts outside the

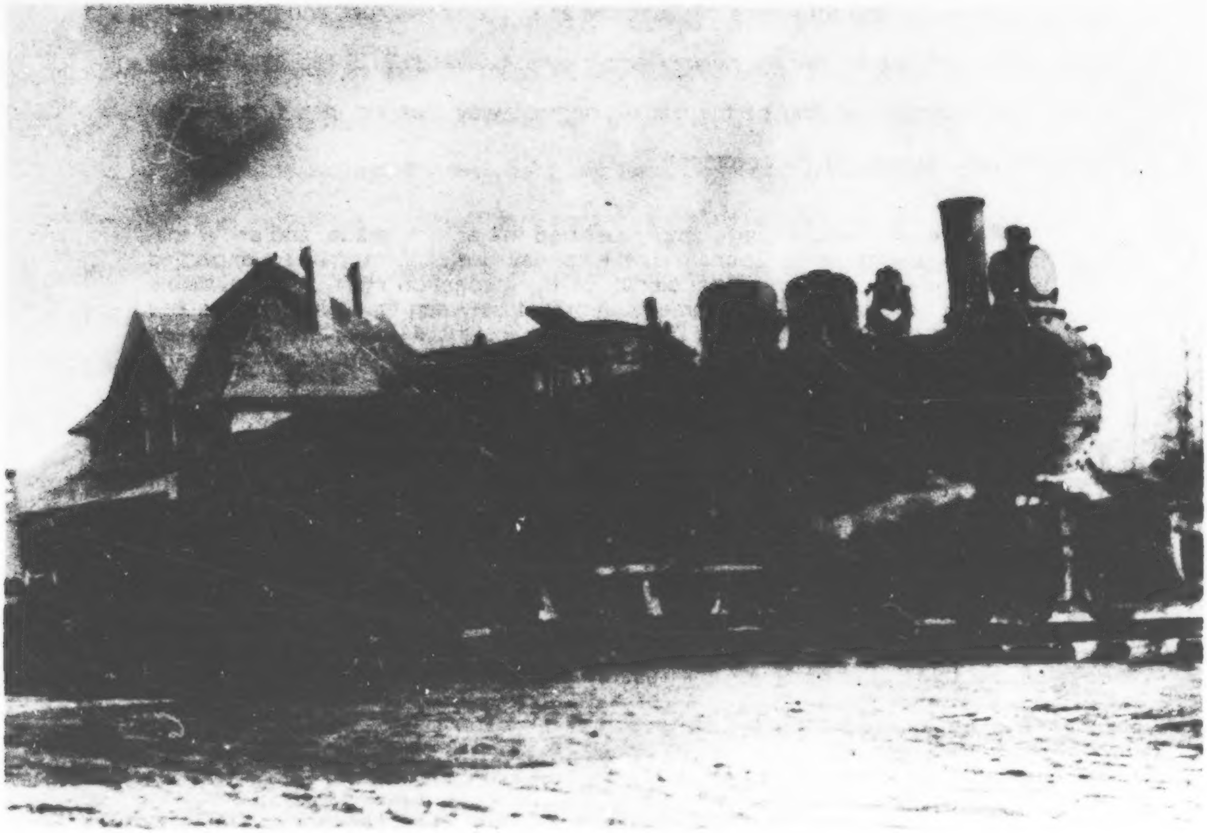


Figure 40. Railway construction locomotive on the Canadian Northern R.R. (Alberta ENR)

forest reserves (Canada 1914). Separate reports for each were prepared by the respective chief inspectors. That distinction between areas was to continue for about 50 years.

A useful review of forest administration was provided by Leavitt (1915) in his report on forest protection in Canada. The forest reserves were established on non-agricultural lands as determined by the Forestry Branch. Reserves in Alberta were administered by a district inspector located in Calgary. Foresters, professionally trained graduates of forestry schools, were generally placed in charge of the administrative units within the district, and forest rangers in charge of the ranger districts on the reserves.

Timber matters were looked after by a separate agency in the Department of the Interior, the Timber, Mines and Grazing Branch. Crown timber agents at Edmonton and Calgary were responsible for collection of ground rent and dues, scaling of timber, inspection of sawmills, control of trespass, and related duties - but not forest protection. The timber work was done by their own forest rangers, even on the forest reserves.

Fire control was a Forestry Branch responsibility. On forest reserves, the job was done through forest rangers and seasonal fire rangers working under authority of the Forest Reserves Act. Outside the reserves another force of men, largely seasonal fire rangers, and spread more thinly, worked under authority of provincial fire regulations. In the opinion of Leavitt (1915) this legislation was not as strong as that for the reserves, having been designed primarily to control prairie, not forest fires.

The deputy minister considered the most important step in advancing the fire ranging work in 1913 (Canada 1914) to be the putting into effect of an order of the Board of Railway Commissoners requiring the railway companies to patrol those portions of their lines that ran through the timber country. In addition, he pointed out that the necessity of extending and organizing the fire ranging staff outside the forest reserves was being brought out more clearly by reports of the forest survey parties which found evidence of "enormous fire damage in the past", and tracts of young growth needing protection to develop into timber of useful size. A report by Edgecombe and Caverhill (1911) indicated that on parts of the Rocky Mountains Forest Reserve 60 percent of the area had been burned in the previous 60 years in the south and 80 percent burned in the previous 50 years in the north. Cameron (1912) reported 14 percent or 900 square miles burned within the previous 25 years around Lesser Slave Lake, while Doucet (1915) found fires in the previous 50 years had burned 65 percent of the area in the Smoky River - Grande Prairie area. Whether these apparently-high figures represent normal or accelerated rates of burn is unknown.

The deputy minister also reported that the work of the Irrigation Branch had increased to such an extent that it had been necessary to create a new branch in the Department of Interior to provide for a better handling of the work, and thus this responsibility was removed from the Forestry Branch.

Staffing questions continued to demand the attention of the director of forestry. During the spring of 1912, 10 graduates of forest schools were added to the staff, but 11 left to work with the newly-formed Forest Service of British Columbia, among whom were H. R. MacMillan and P. Z. Caverhill who each became chief forester in turn. He noted that at the end of the year 17 graduates of forest schools were on staff for the entire Forestry Branch. He again described the inadequate numbers of staff to do the job. During the year Abraham Knechtel, inspector of forest reserves, transferred to the Parks Branch.

The annual report also devoted considerable attention to the qualifications a forest ranger should have. The establishment of a ranger school was recommended for the necessary training. At that time there were ranger schools in all countries where forest services were established on a permanent basis, including Germany, France, Sweden and Russia.

A significant development announced by Campbell was a proposal for a forest products laboratory to be established the following year. The idea was supported by resolutions from the Canadian Forestry Association and the Canadian Pulp and Paper Association. This represented the first formal move into research by the Forestry Branch, and also indicated the increasing value attached to the wood resource.

The report of the district inspector of forest reserves for Alberta for 1913 was extensive, descriptive and analytical, and well deserving of attention. Unfortunately, the author of the report was not shown, although the next report indicates that it was W.N. Millar, a recently appointed Yale forester. The report stated that there were three forest reserves in the Alberta inspection district - Rocky Mountains, Cooking Lake and Cypress Hills. The Rocky Mountains Forest Reserve was further divided into five administrative

Figure 41. Forest fire at Grand Rapids on the Athabasca River. (Public Archives Canada PA 46071)

units. These seven areas were described as follows.

Forest	Headquarters	Acres
Crowsnest	Pincher Creek	856,960
Bow River	Calgary	1,998,360
Clearwater	Rocky Mt. House	2,460,800
Brazeau	Coal Spur	2,506,880
Athabaska	Coal Spur	1,696,640
Cooking Lake	Calgary	17,360
Cypress Hills	Calgary	99,840
	Total:	9,690,840

In addition to this area, 1.69 million acres of proposed extensions to the Rocky Mountains Forest Reserve were also administered by forest rangers pending final action by Parliament on the recommendations. There was an additional area north of the Athabasca River between Lesser Slave Lake and the mountains which was being surveyed as a possible reserve. For the first time the number of employees in Alberta was stipulated:

Title	Number
Inspector	1
Supervisors	11
Forest assistants	5
Forest rangers	56
Clerks	6
Laborers	86

This report also contained a long discussion of the special qualifications needed by forest rangers, drawing a clear distinction between these requirements and those of foresters and others. The need for defined qualifications and training was clearly presented. As the district inspector put it:

> "Present-day methods of fire protection for standing timber are as much advanced over the methods of 20 years back as is the modern motor fire-truck an improvement over a bucket brigade...... No longer in those countries where forest fire protection has been developed along modern scientific and practical lines, is the forest ranger handed an axe and a badge and told to go out into the woods and prevent fires, any more than is the modern soldier given a war-club and told to go out and fight the enemy..... If it is realized that it takes from four to six years of collegiate training to give men the fundamentals of this art of (scientific) forestry it will be conceded that the forest ranger, upon whom falls the duties of carrying out the plans for scientific forest management, cannot be fitted for these duties unless he has been specially trained for them......"

This report also included statistical summaries of fires for the first time, listed by size class, cause, month of occurrence, damage and costs of suppression. For the year 1913, of 33 reported fires, 22 were caused by locomotives.

The problem of staffing levels was discussed, especially in light of access and travel limitations.

> "It will be readily understood that in a region where distances are so great and labour so scarce there is little possibility of adjusting the forest-protective force to the character of the seasons except in the most general way. It is practically necessary to employ a certain number of men early in the season and maintain them, under pay for a period of about six months, regardless of the character of the weather conditions during that period. When it is realized that it takes some of these men a week or ten days of hard travelling to reach their stations from the railway, the impracticability of taking on and laying off men according to the season becomes readily apparent....."

> "The fire-protection work on the Forest Reserve forms the basis of the entire administration, and at the present time can be considered the most important work that we are undertaking..... The Districts are laid out on topographic lines.....naturally vary much in size, the smallest being 25,000 acres and the largest 500,000 acres. The average for the entire district last year was 211,000 acres per ranger....."

> "Considering, therefore, the condition of our personnel and the lack of improvements and facilities for communication in the reserves, I feel that the average area entrusted to each ranger is too great, and that it should be reduced to not more than 150,000 acres. This will involve a material increase in the force, even to guarantee a reasonable security from destructive fires....."

Using his figures, calculations indicate this it would have required an increase in ranger staff to 76 to meet the standards, an addition of 20 men. However, he made an important economic observation with respect to the extent to which protection from fire should be extended. Referring to the value of the timber and regeneration, he stated:

> "We are, therefore, not justified in attempting to provide absolute immunity from fire-damage in the Rocky Mountains Forest Reserve, but only such a degree of protection as is justified by the value of the resources under our

charge."

Preparation of fire plans for each of the forest reserves was mentioned for the first time, and the purpose and advantages of a fire plan were outlined. While the importance of extending roads, trails and constructing cabins was recognized, he was dismayed to find no preparation had been made for such work, and there was no organization or other system whereby it could be done. This, in spite of the fact that "the pressure to place the reserves on a better basis for protection - a very natural result of the disastrous fire season of 1910 - was great." Steps were taken to remedy that, and specifications were developed for various improvements.

Trails were classified as of two types - standard and secondary. Standard trails were designed to speed access to fires. He referred to offtrail travel in the mountains by horse as ordinarily being from 12 to 15 miles per day. He commented that such slow progress was not well adapted to the exigencies of fire protection - "to reach a fire with a reasonable degree of promptness we should be able to travel for two or three days at the rate of twenty-five to thirty miles per day". To enable this, the standard trail specifications were developed, described in the Appendix. Specifications were also written for telephone line construction work and construction of ranger cabins.

Millar warned that in order to ensure a reasonable degree of fire protection it would be necessary to construct several thousand miles of trails, some hundred or more cabins, and a considerable mileage of telephone lines. He was unable to give reliable cost estimates since he did not have adequate knowledge of the size and condition of the reserves.

The two advantages of allowing grazing on the forest reserves were again cited - providing for utilization of a valuable natural resource, and reducing fire danger by removing fuels and creating trails. He pointed to a third advantage - "we secure the friendly interest of a large number of people because of the fact that fires in the reserves endanger the forage upon which their stock is dependent." The positive attitudes of ranchers adjacent to reserves in support of fire suppression appeared to bear out this last point.

The importance of education and publicity was also stressed, but Millar lamented the fact that lack of time forced him to decline many invitations to talk to various groups.

Figure 42. Trail crew constructing grade on a standard trail. (Alberta ENR)

E. H. Finlayson had been appointed inspector of fire ranging that year, to look after the areas outside the forest reserves. Finlayson was a forestry graduate of the University of Toronto and had fire ranging experience in Ontario. He also presented an extensive review (Canada 1914), much of which is also worth discussing. His work fell into two distinct classes - fire protection along railway lines and protection outside reserves.

He believed that the comparative immunity from fires in 1912 was due to the fact that there was now excellent legislation for protection along railway lines. The persistence of railway fires in subsequent years, however, brings into question this comment. He referred to the measures provided through the recent order (No. 16570) of the Board of Railway Commissioners which called for fire-prevention measures in six general categories.

1. Use of fire-protective appliances.
2. Non-use of lignite coal.
3. Proper supervision of tie-burning.
4. Clearing right-of-way.
5. Plowing fire-guards.
6. Establishment of a special patrol force.

He felt that in the establishment of a special patrol force lay the real solution of fire protection along coal-burning railways. He saw two major advantages.

> "Owing to the large number of fires which have occured along railway lines, it was formerly necessary for the Branch to provide its own rangers to contend with his fire evil; but now, with the compulsory establishment of a patrol force by the company itself, operated and maintained by the company, the Branch is not only relieved of a financial outlay which is not rightly its own, but has a body of men working under the supervision of the railway officials, and perhaps there is no organization so well fitted to efficiently handle such a staff of men as a railway company."

He spoke highly of the cooperation by the Canadian Northern Railway, which instituted a patrol of one man for each 10 miles of line west of the Pembina River beyond Edmonton. However, he noted that the Grand Trunk Pacific Railway Company was very dilatory and, in fact, did not comply with the order of the chief fire inspector at all.

For fire protection outside the reserves the area within the three prairie provinces was divided into eight large districts, two of which included parts of Alberta - the Edmonton and Great Slave districts. Each of the districts was under the supervision of a

Figure 43. Railway speeder patrols helped to control the railway fire problems. (Alberta ENR)

chief ranger who had a staff of fire rangers seasonally employed. In contrast to the forest reserves with 33 fires totaling 924 acres, Finlayson reported 480 fires which burned approximately 1,000 square miles. Campers and travellers, land clearing and "unknown" accounted for about 25 percent of the fires each, while locomotives accounted for 18 percent.

The Edmonton district was very large, including the country from Red Deer and Rocky Mountain House north to and including the Peace River district. R. H. Palmer, chief ranger, had 58 rangers in 1912, of whom 30 were retained for the greater part of the season from May until November. In spite of the increase in manpower, he noted that "the magnitude of the country forces these men still to confine their attention to the main trails and waterways, as it is along such avenues of travel that the majority of fire was started." He noted that with the influx of settlement into the Peace River country that additional staff would soon have to be added there. In the absence of highways the rivers were major routes of travel. He stated:

> "From Athabaska Landing the only way to the north is down the Athabaska River, in summer by boat, canoes or scows, in winter by dog train. Practically all ingoing people have to camp on the shores of the river at night, and, therefore, here lies the chief danger. To contend with this, we have a stern-wheel patrol boat continuously engaged in patrolling the river from the Landing to Grand Rapids. The boat is manned by four men, who, in addition to operating the boat, are official fire-rangers."

The Great Slave District embraced the Athabasca River for over a hundred miles below Grand Rapids, the Clearwater River east to the Fourth Meridian (Saskatchewan boundary), and the Lac La Biche trail. This area was supervised by a Mr. Conroy of the Indian Department who had seven men employed as rangers.

Finlayson addressed the questions of legislation and enforcement, pointing out problems encountered with the provinces.

> "One of the greatest difficulties in promoting a proper regard for the law is the deficiency in the fire laws of the three provinces; under these laws it is almost an impossibility to get an offender convicted and properly punished, owing to the loose interpretation of the law by rural judiciaries. It is hoped, however, that the legal departments of the provinces will awake to the necessity of efficient, up-to-date legislation, so that the forestry officials will not be so handicapped in their campaign to reach an ideal, to secure a proper observance of the intentions behind all fire laws, viz., *prevention of fires*."

He also noted another problem - that of inadequate brush disposal during the construction of provincial roads through forested areas. Nearly every provincial road

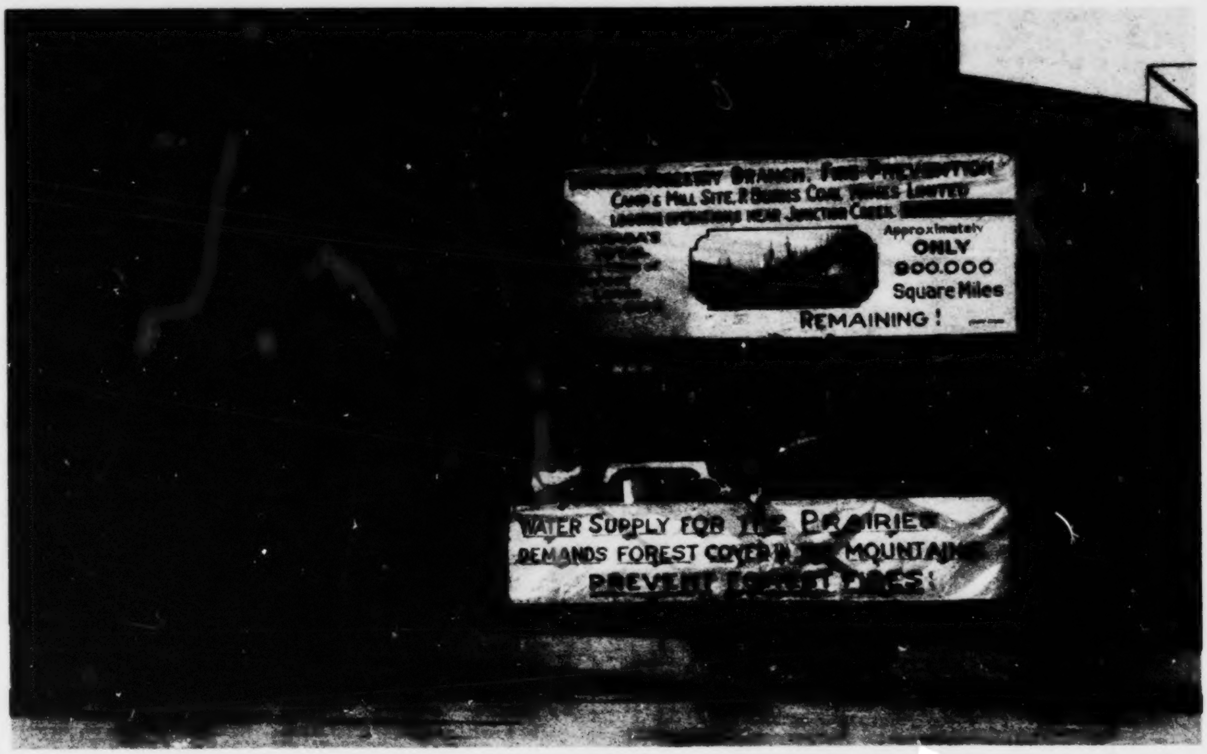

Forestry Branch. Fire Prevention
Camp & Mill Site. P. Burns Coal Mines Limited
Logging Operations near Junction Creek.
Approximately
ONLY
900.000
Square Miles
REMAINING!
WATER SUPPLY FOR THE PRAIRIES
DEMANDS FOREST COVER IN THE MOUNTAINS
PREVENT FOREST FIRES!

Figure 44. The steamer Northland Sun at Athabasca Landing. The Dominion Forestry Branch also used a stern-wheeler for fire patrols. (Provincial Archives of Alberta)

through forested land, he said, was an inevitable firetrap. Brush and slash were piled at the sides of the clearing and left to rot, solely to avoid the expense of removal by careful burning. He was concerned not only with the fire hazard, but with the poor example it set with settlers with whom they were trying to work.

In 1914, W.W. Cory, the deputy minister (Canada 1915) announced that the forest products laboratory had been organized in Montreal in connection with McGill University. He also pointed out that forest surveys in the northern districts were showing that tracts of timber of a size for cutting into lumber were very scattered and of small area so that these timber resources were not as rich as believed. He referred to the immature timber over practically the whole area and stressed the need to protect it from fire so that there should be a great wealth of timber there for the future.

Campbell (Canada 1915) announced that progress had been made in better disposal of the debris of lumbering operations on forest reserves. In Alberta, brush was required to be piled or scattered so as to lie flat on the ground, thus materially decreasing the fire hazard. The authority for supervision of logging operations within the department apparently was still with the Timber, Mines and Grazing Branch, and not with the forest reserve staff. Campbell made the comment:

> "A decided advance has been made in the question of brush disposal after lumbering operations, and it is to be regretted that this branch has not been authorized to take up the matter as it relates to the timber berths held under licence in the forest reserves."

In spite of this, there must have been some input, for Campbell announced a sale of timber to the Brazeau Collieries on 7,360 acres in the Clearwater Valley subject to six conditions. Three of these related to fire - proper disposal of logging debris, necessary precautions to prevent starting or spread of fires, and "that for fighting fire in the vicinity of, or threatening, the tract, the purchaser should give, free of charge, the assistance of the men employed by him."

Campbell reported a very satisfactory fire situation during the 1913-14 year, due largely to favorable weather. However, he credited the good result also to the increase in number and efficiency of the staff of rangers, to the increased facilities for preventing fire in the forest reserves due to improvements, to public education about the danger of fire, and to the enforcement of the special provisions of the Railway Act relating to

Figure 45. Slash from logging operations was a major concern in fire control. (Alberta ENR)

railways. He referred again to the desirability of appointing ranger staff on the basis of special qualifications for the work and that appointments should be permanent, conditional on good behavior and efficiency. That was a point also reiterated by Millar in his annual report on the forest reserves (Canada 1915). He presented a lengthy reasoning for the creation of an organized scheme of training and instruction for forest ranger staff within the Forestry Branch. He noted that there were absolutely no facilities in the Dominion for the training of forest rangers, even though employees in those ranks outnumbered professional foresters more than 20 to one. He felt that next to placing rangers on a basis of permanency, no more important step could be taken than creating an organized scheme of training and instruction. That was not to come about in Alberta for another 20 or more years.

To support his view, he cited the case of one large fire which developed on the Brazeau forest in spite of having a newly constructed trail and headquarters for the rangers in the district, connected with the supervisor by means of telephone, and a lookout who discovered the fire within a few hours after it had been set. He stated:

> "In fact, we had practically all of the necessary ingredients of first-class modern fire protection except an efficient ranger and this fire attained the size it did and caused so much damage simply because we had a ranger who was not able to find his way around the woods."

On June 6, 1913, an Act of Parliament added over 1.7 million acres to the Rocky Mountains Forest Reserve, and created the Lesser Slave Lake Forest Reserve of 3.2 million acres in two blocks, including parts of the Swan Hills and the Marten Mountains. The act consolidated and confirmed forest reserve boundaries for which extensive surveys had been in progress.

Three fire ranging districts now existed in Alberta outside the forest reserves - the Edmonton district with 40 rangers, McMurray with eight rangers and the Great Slave district serving parts of northern Alberta headquartered at Fort Smith with two rangers (Canada 1915). In the fire ranging districts campers, surveyors and prospectors were the greatest causes of fires and greater patrol to curb those was advocated by both Campbell and Finlayson, inspector of fire ranging. Locomotives were the next greatest and increased patrol was thought needed. Clearing of land by settlers was the next greatest cause of fire. To deal with them, the desirability of making changes in the provincial fire acts to give better control of settler-caused fires was advocated. Particularly recommended was a permit system for setting out fires such as provided for in the British Columbia Fire Act. The greatest proportion of fires related generally to slash and debris, making the improvement of preventive measures through slash disposal in lumbering operations, road clearing and other work of great importance.

The fire season during 1914 was described as the worst since 1910 (Canada 1916a). On a more encouraging note, Campbell reported that regulations of the Board of Railway Commissioners made the railway companies primarily responsible for fires occurring within 300 feet of the track, unless such fire was clearly started by other agencies. He noted that the railway companies had complained that while they were required to clear their right-of-way of combustible material, there were other areas of debris and slash within the 300-foot limit caused by timber operators, provincial road departments and others. As a result of this complaint, Campbell recommended that both Dominion and provincial authorities take measures to do away with the danger.

Campbell cited cooperation of the railway companies, but mentioned that the Edmonton Dunvegan, and British Columbia railway company had transgressed every regulation and instruction of the board and paid no attention to the requests of the inspector. As a consequence over 50 percent of all railway fires in 1914 occurred along that one line. A specific appeal to the board of Railway Commissioners resulted in a hearing and a specific order requiring the company to take immediate steps to remedy the situation. He also referred to increasing use of oil-burning locomotives in the Railway Belt of British Columbia as contributing to further reduction of danger along that line.

W. N. Millar resigned to join the staff of the Forestry School at the University of Toronto, and E. H. Finlayson was made district inspector of forest reserves for Alberta in his place. He was also responsible for fire-ranging within the Alberta district. Finlayson reviewed the work of Millar, and reiterated the need for establishing a first-class ranger school, as well as providing career opportunities for graduates of such a school within the Forestry Branch.

Finlayson also commented on the serious 1914 fire season and noted that the fire protection plans had not occupied the important position in relation to general work that was required. He felt that as a result of extremely favorable conditions during the 1912 and 1913 seasons there was a tendency to give too much stress to the construction of facilities instead. The main thrust of his argument was "no matter what the immediate condition may be, from April to November we must constantly keep before us the distinct vision of the ever-lurking enemy, fire". This sentiment has had an influence on priorities of work during the fire seasons within the Forest Service which has prevailed to the present.

Finlayson described problems with getting manpower to fires which became evident that year (Canada 1916a). One problem was availability of access for rapid travel, the other, qualification and willingness. He noted that on two fires it was necessary to hire men in the city of Calgary, transport them by rail to Morley and Olds, and then haul both men and supplies from 25 to 75 miles by team and wagon. He also noted that it was a difficult matter to secure willing cooperation from among the population of the mining towns. In most cases they were only temporary residents and not very directly interested in the preservation of timber in their particular locality.

Annual reports for the years 1914-18 referred to staff enlistments in World War I armed forces, but the work of building the forest reserves appeared to go on in spite of depleted manpower. By the 1915-16 season the deputy minister of Interior reported optimistically (Canada 1917):

> "On the forest reserves the protective system is approaching the point, as a result of the improvement work carried out, where the fire situation should be possible of control, with proper planning of the work of fire-fighting and efficient work by the rangers. With protection against fire on the forest reserves fairly provided for it has been possible to take up the work of reforestation."

In spite of the remarks, R. H. Campbell, now director of forestry (Canada 1917), still expressed concern over fires. He identified two particular requirements. The first was a complaint that many of the rangers working in locations without immediate supervision showed a merely perfunctory interest. Plotting of the fires occuring on the reserves showed very clearly the rangers who were careless and "the heavy and inevitable losses that result". The second point was organization and preparation, in which he emphasized that fire fighting was not something which could be dealt with on the spur of the moment. He stressed the need for planning.

Increasing concern was given to the need for drawing to public attention the necessity for fire prevention, and plans for some "educational propaganda" were made for the next year. Campbell reiterated concern about the legal aspects of fire prevention:

> ".....the legal provisions for the control of fire used in clearing land are entirely inadequate. Neither the provincial fire Acts nor the Dominion lands regulations give the fire ranger any control, even in the best timbered districts, of the setting out of fire, and unless the control is preventive it never can be fully successful."

Finlayson elaborated on the problems created by respective federal-provincial jurisdiction in the fire ranging districts, stating that it would probably never be possible to develop a highly efficient fire preventive organization with the present methods. He noted that the Forestry Branch had no administrative control over lands within the fire-ranging districts except for fire protection. It was therefore impracticable to consider construction of improvements to enhance the fire fighting job. He felt that the best policy would be to greatly extend the area of forest reserves to include all land which was essentially forest land. When that was done he felt it would then be possible to formulate definite administrative plans for management, including improvements for fire protection.

R. H. Campbell reported that Dr. B. E. Fernow, dean of the Faculty of Forestry at the University of Toronto, made a visit to some of the Dominion forest reserves to gain information which he could pass on to students. Fernow made a number of suggestions for further studies and research. Although none dealt with fire, the need for research was at last being raised as an issue. Fernow was definitely impressed with the timber-growing capabilities on the forest reserves of the prairie provinces.

Allison (1914) remarked that both Clifford Sifton and Frank Oliver had been noted ministers of the Interior but that the succeeding ones were virtually unknown. W. J. Roche became minister in 1914 in the Borden government. He did not display a great deal of enlightenment in Parliament on Feb. 15, 1916 (Canada 1916b), when he responded to a question asking about the duties of fire rangers in connection with timber reserves. Roche replied:

> "Their duties are, in the first place, to reside upon the forest reserve, where they have little houses. In the reserve there are certain trails that have to be patrolled daily by the rangers. They are supposed to safeguard the forests against fire......"

Roche also had difficulty distinguishing between fire rangers and forest rangers. Asked whether he considered the fire protection system satisfactory, he responded "We are improving it from time to time". He commented in favorable manner that the cost of

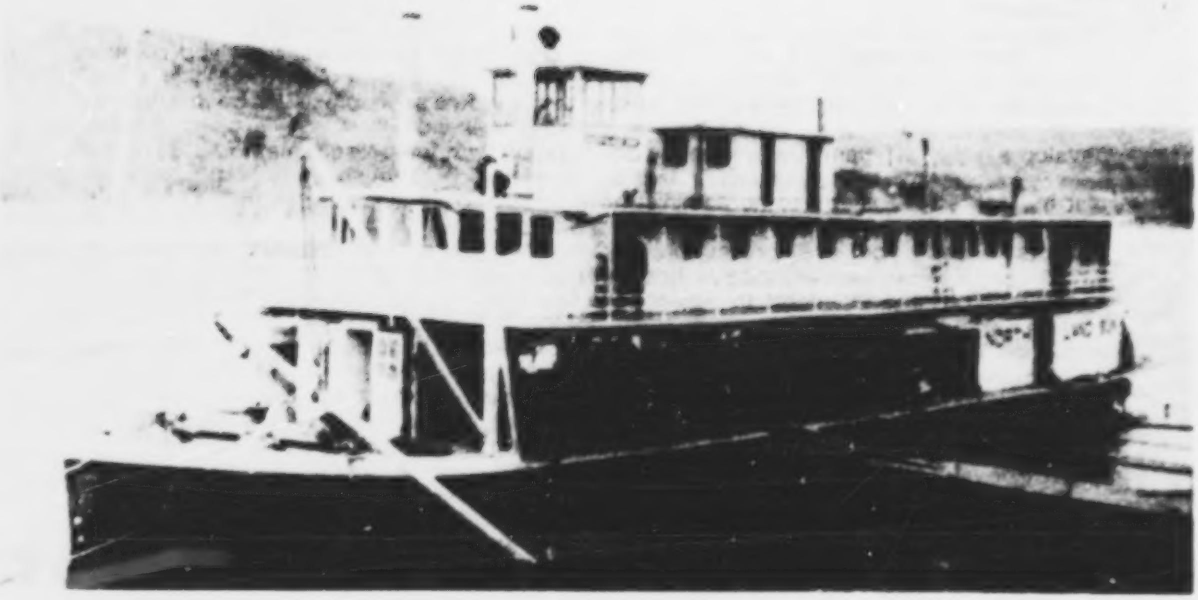


Figure 46. Early efforts emphasized the importance of publicity for fire prevention. Dominion Forestry Branch float in Calgary Stampede parade. Photo by The Grant Studio. (Alberta ENR)

administration in the forest reserves came to about two cents per acre, "which is less than the cost of administration in forest reserves in almost any other country in the universe". During these discussions a Mr. Cruise suggested that there should be some cooperation between the provincial government, the municipalities and the Dominion government in building highways between the settlements and the reserves to also serve as fireguards. Roche stated that he would take the suggestion into consideration. In another debate on March 23 he responded to questions and suggestions with similar generality.

Patronage was another problem in administration mentioned by Clyde Leavitt, chief forester of the Commission of Conservation, in his report of the committee of forests (Canada 1916c). This related to the need to establish a merit system of appointment in the field service of the Dominion Forestry Branch. He stated the following, and reiterated his concerns the following year (Canada 1917b):

> "In this Branch..... the greatest obstruction to efficiency is the continued selection of fire rangers on the basis of political considerations, rather than of fitness to perform the responsible duties of fire rangers. The patronage system is both inefficient and uneconomical, and Canada need not expect adequate protection from forest fire until fire rangers are selected on the basis of merit."

J. B. Harkin, commissioner of Dominion parks, presented a talk on fire protection (Canada 1916) commenting that fire protection in the forests and Dominion parks was undoubtedly one of the most serious problems confronting the park organization. He described some developments in mechanical equipment and use of interned aliens for cleanup of flammable materials along park roads.

He particularly elaborated upon wide-ranging and imaginative fire prevention programs developed to try to reduce the incidence of man-caused fires. Through Dominion parks representations, he stated, manufacturers of matches had agreed to put fire prevention notices on match boxes. Ammunition manufacturers were requested to do the same on ammunition packages designed to reach hunters. To reach campers, manufacturers of tents were pursuaded to include fire prevention notices within the tents themselves "so that a man living in a tent would, the first thing in the morning, notice: 'be careful of fires', and every time he entered the tent he would have the benefit of the iteration of that notice". Special axe labels were printed in order to try to educate woodsmen, and axe manufacturers agreed to place them on axes along with their own labels. Notices were placed in the cab of every locomotive engine operating through the parks reminding enginemen of the need to prevent fires.

To reach the tourists, arrangements were made for railway companies to post fire notices in their coaches, to print notices on their schedules, and on their dining car menu cards. The Canadian Pacific Railway Hotels apparently agreed to print suitable fire warning notices on their menus and to hang a notice in every guest room in every hotel in the Banff park. Notices were also arranged to be placed along roads, and trails, and even "one was attached to the reins of all livery stable ponies in such a position that the rider could not grasp the reins without noticing it".

Although the initial efforts of the Commission of Conservation received positive responses from the government, later reactions were apparently not consistently so. Under the discussion of resolutions, the Committee on Forests (Canada 1916c) commented that the adoption of resolutions by the Commission of Conservation had proved ineffective or only partially effective in past years in connection with a number of matters of great importance.

The committee felt that instead of recommending the adoption of further resolutions along the same lines it would be preferable for individual commission members to make stronger personal representations for accomplishing the desired results. Among those matters mentioned were reorganization of the many fire protective services with a view to securing more personnel and a closer degree of supervision over the work of field staff, and improved slash disposal on logging operations and along railway lines.

Campbell (Canada 1917a) referred to the great loss of lives and property in the province of Ontario in the summer of 1916 as a result of forest fire. He identified one of the most prominent controllable factors as the setting of fires by settlers for clearing lands under conditions of extreme danger. He stated that the setting out of fires on Dominion forest reserves was controlled adequately by provisions of the Forest Reserves Act. However, he noted that on the large area of Dominion lands outside forest reserves the matter was governed by the provincial fire acts or by the homestead regulations. Recommendations had been repeatedly made to the prairie provinces to provide for a system of permits from fire rangers as a means for maintaining effective control. He noted that during the legislative session of 1917 the provinces of Manitoba and

Figure 47. Prevention also meant posting fire notices along trails and at camp sites. (Alberta ENR)

Saskatchewan did pass changes to their fire control acts to provide a permit system, but that this had not yet been done in Alberta. He also discussed again the need to distinguish agricultural from forest lands:

> "The relation between the forests and settlement is a question involving many interests, and is one not easy of solution. The need for land for settlement after the war will make it necessary to devote every possible piece of land to agricultural purposes, but on the other hand the financial demands for the war will make it advisable and necessary to protect the public forest property, and ensure that the forest on non-agricultural land is retained and brought into best producing condition. As was stated in the report of last year, this is a question which cannot be decided from the point of view of either interest solely, and which shows the necessity of co-operation between the agricultural and forestry interests for the development of an agricultural and forest survey of the country such as will determine the best general lines of development for each district".

Campbell also stressed that scientific research in the forest was a necessity to ensure proper methods of management. He quoted from the report of an advisory committee which had been formed in connection with the Forestry Branch which pointed out the great need for organizing forest research work in Canada. Again, no reference was made specifically to fire or forest protection, but the recognition of the need for forest research was significant.

The need for public education in fire prevention was reiterated. He noted that public schools had been visited by officials of the Forestry Branch who gave talks on fire danger, the matter being emphasized by the presentation to pupils of items such as wooden rulers on which were printed mottoes impressing the lesson.

The problem created by variations among fire seasons was addressed again by Finlayson, (Canada 1917a).

> "While the occurrence of these wet seasons certainly reduces the actual loss in forest resources for these particular seasons, it is, unfortunately, not a condition which is in itself conducive to the building up of an efficient fire-fighting organization."

He pointed out that it followed that urgent efforts must be directed towards educating forest officers and the general public to secure the prevention of fires, and that every effort must be made to develop to the utmost the facilities for the actual fighting of fires which must inevitably occur.

These sentiments were reflected in a manual of instructions for forest rangers on the Bow River Forest Reserve (Forestry Branch *ca.* 1917). It dealt with the general responsibility of forest rangers, but emphasized the fire prevention responsibility. On that subject it stated:

> "The protection of the woods from fire is the chief reason for the Dominion Forest Reserve Organization. It is the first requisite of proper forest management. No other work must be allowed to crowd it out. Even the construction of permanent improvements, which is so closely related to the fire problem, must take second place."

> ".....conditions of fire danger should be given first consideration by the Ranger and other work should not be allowed to interfere with the proper protection of his district. The ranger himself is the best judge of when an emergency is approaching, and should be able to turn his improvement crews, etc., into a fire protective organization at the shortest notice."

The manual went on to state that fire prevention, as it was termed, naturally divided itself into three distinct parts - prevention, detection, and control. The manual elaborated on all three points in some detail. One of the fire prevention suggestions was directed towards campers:

> "An excellent idea is to select suitable campgrounds on your district, clean up the combustible material, dig pits for the camp fire and for refuse, and in general encourage clean camps at safe places."

Many of the early campground developments in the western parks and forest reserves had as their major rationale the prevention of fires through aggregation of people and reduction of fire hazards. Fire hazard reduction was a primary consideration in early design and development of campgrounds.

For 1917-18 Campbell (Canada 1918) reported that the expenditure on forestry work in Canada was being kept at modest figures in comparison with other countries. He stated that the average expenditure on the forest reserves under Dominion jurisdiction was 1.75 cents per acre, while in the United States it was three cents, in India nine cents, in Sweden 14.5 cents and in France $ 1.04. It was not clear in the report whether or not this was being stated with pride of efficiency or shame of inadequacy. However, he did state that on none of the forest lands, federal or provincial, were the organization and equipment adequate and efficient for the extent of the forest protection work required. He accounted for this as partly from lack of funds, and partly from lack of interest resulting from an inadequate understanding of the value of the forests and the danger which the present situation presented.

Figure 48. Early campgrounds were commonly developed to congregate people for more effective fire prevention. (Alberta ENR)

On recommendation of the Honorary Council for Scientific and Industrial Research an appropriation of $6,000 was made for beginning a program of forest research - the start of the forest research work of the Forestry Branch. A Forest Experiment Station was established in the vicinity of Petawawa, Ontario, and placed at the disposal of the Department of Interior for the purpose by the Department of Militia and Defence. With control of the fire danger becoming effective to a larger degree on the more intensively administered forest reserves, as Campbell put it, it was possible to make advances in forest development and management. The attention paid to forest research within the federal agency was to increase substantially as it became apparent in subsequent years that responsibility for management of the forest resources would eventually be transferred to the provinces.

R. H. Campbell listed "forest study and experiment" as one of four priorities for Canada's forests, along with protection, management and replanting (Canada 1918). Johnstone (1973) paid tribute to the significant role which Campbell played in creating a forest research role for the Forestry Branch.

> "If there was one subject that obsessed Campbell to the end of his active career as Director of Forestry, it was the need for scientific research. This classical civil servant, a man without any scientific training, who made a point of staffing his organization with scientifically trained people, never let his superiors forget the need he saw so clearly. He constantly hammered home his arguments in his annual reports, and he used the reports of Fernow and other authorities to give them weight. Thus, in 1917 he was able to quote from the memorandum of the forestry advisory committee that had been prepared for the newly appointed Dominion Council for Scientific and Industrial Research, pointing out the great need for organizing forest research in Canada.
>
> "The memorandum bluntly stated that ignorance, lack of definite information, and opinions rather than knowledge of facts had in the past characterized, and still to a large extent characterized, the methods of handling the forest resources of Canada, to their detriment and loss. Governments and private owners alike treated their forests like mines rather than like crops. Such ignorance could only be eliminated by systematic investigation or research. There was only one way to keep the forest resource inexhaustible, and that was reproduction. Next to nothing was known about whether cutover lands were reproducing timber that had been removed or, at what rate."

Another development of note was the placing of appointments in the "outside service" of the department under the Civil Service Commission, and therefore outside the influence of patronage. Campbell believed that this would very much improve the possibility of obtaining properly qualified men for ranger positions and should in time improve the calibre of the force.

The problem of opportunities for men to obtain proper training for the work of forest ranger previous to appointment was again discussed. He was evidently pleased to have been able to report:

> "As it is considered desirable that returned soldiers should be given the first opportunity for obtaining appointment in the forest service and gaining necessary qualifications for appointment, arrangements have been made by the Military Hospitals Commission for a forest ranger course for returned soldiers to be given at Vancouver, in which co-operation is being given by the staff of this branch as well as the forest service of the province of British Columbia."

The course was to be given in three main divisions, one of which comprised forest protection.

The report of Finlayson, district inspector of forest reserves in Alberta (Canada 1918), outlined a new, more formal structure, in their organization, distinguishing three units. He referred to a "Forest Reserve Administration", a "Fire-ranging Administration", and a special organization provided, in cooperation with the Dominion board of Railway Commissioners, for "Fire protection along railway lines". At that time Dominion forest reserves within Alberta covered approximately 12.4 million acres, with Dominion park reserves comprising approximately 4.6 million acres in addition and totaling about 10 percent of the entire provincial area. He suggested that in total, not more than 65 percent of the provincial area should be considered as agricultural, leaving a remainder of 30 percent which should be devoted to the production of timber.

Two administrative problems were brought out by Finlayson. The first was the internal problem created by the revenue-producing administration of timber berths by the Timber and Mines Branch, and the Forestry Branch charged with protection and management. The second was that of joint Dominion-provincial jurisdiction.

To illustrate the first point, he stated that the 1917 fire season was the most serious since 1914, and that the most serious fire of the season occurred on the McLaren timber limits in the Crowsnest Pass. He commented:

> "This fire, which killed over seven million feet of merchantable timber and cost considerably over $4,000 to extinguish, was the direct result of careless lumbering operations. Not only did all the evidence indicate that the fire actually started from a small mill operated by the company, but the conditions which permitted it to spread so rapidly and made it so difficult to control were exactly those which for years past this branch has been endeavouring to demonstrate to the department as being inimical to forest protection and conservation. Although the Forestry Branch is responsible for fire protection on such areas, it has as yet no control whatever over the operations on

> licensed timber-berths and cannot even require the operators to take reasonable steps towards protection from fire."

He went on to describe how officers of his branch had repeatedly written about the serious menace that was developing as a result of logging slash left by this company and about their efforts to take some action within the department, but to no avail.

In regard to Dominion-provincial jurisdiction over the fire-ranging administration he stated:

> "In parts of the Peace River District, extensive prairie fires occurred which resulted in very serious personal loss to the settlers affected. To a certain extent the staff of this branch is subject to critism for allowing these fires to gain such headway. This, however, is due to a misunderstanding on the part of the public generally with regard to the responsibilities of the fire-ranging organization. As has previously been stated, the Forestry Branch is directly concerned only in the *protection of the timber resources of the country*. Responsibility for fire protection in the more settled districts which do not embrace timber, lies with the police and rural organizations, under the direction of the fire guardian of the provincial administration."

Finlayson emphasized once again that permanent forest units should be delineated as soon as possible so that they could be brought under regulation to permit proper administration and development.

A Commission of Conservation report on property (non-forest) fire losses (Grove-Smith 1918) contained two interesting comments which are indicative of a reaction of urban fire staff to the increasing attention being given to forest fires at that time.

> "It is as necessary to conserve created wealth as it is to prevent the waste of natural resources. Nature in time may restore devastated forest areas, but only human toil can raise a new city from the ashes of the old."

Also cited by Grove-Smith was a comment by Hon. Charles S. Deneen, governor of the State of Illinois.

> "Commendable as is the effort to conserve natural resources, I am impressed with the greater necessity of conserving the properties of our people. Our natural resources merely awaited the discoverer. Timber, minerals, and water-power stood at the door of our forefathers. None of these things required a single ounce of energy, a single moment's time or a penny of money. Not so with the builded properties of our people....."

However, at the same time Grove-Smith (1918) presented figures to try to illustrate the magnitude of the total fire problem. Losses in property fires had averaged almost $14 million per year in the 50 years since Confederation. Those loss figures included the direct loss, cost of protection, and excess of insurance premiums. He was unable to present definitive statements of forest fire losses owing to the paucity of information available. He mentioned that statements had been frequently published giving $8 million to $15 million per annum as an average for forest fire, but observed that it was obvious that those figures were merely guesses. He showed perception by stating that such guesses only included the merchantable timber that had been destroyed, and ignored the enormous but incalculable potential values of the timber which had not attained merchantable dimensions. The figures suggested that the value of forest fire losses was probably greater on average than property losses at that time.

6.3 Consolidation and transition 1918-1930

A plateau of sorts appears to have been reached at this time within the Forestry Branch. The work consisted essentially of administration of the forest reserves, fire ranging outside the reserves and railroad fire prevention. Refinements and improvements continued to be made to the essential components of the forest protection activities - including roads, trails, communications and buildings, and reporting on them became almost routine. However, there continued to be many developments of interest which warrant specific mention.

The general status of forest fires during these years was summarized in bulletins describing forest fires in Canada (Dwight 1918, Campbell 1919, Lewis 1920). In general they reflected the developments and problems already discussed. However, there are also statistical summaries which are interesting. The statistics were a recent innovation within the branch. Dwight cited two principal benefits of the statistics, spreading knowledge in regard to the "woeful waste" which should awaken public conscience for greater care, and showing where and what were the major problems to aid in planning.

The major causes of fire were campers, settlers, and railways. The bar graph reproduced from Lewis (1920), showed their relative importance on Dominion lands, forest reserves and Dominion parks. The number of fires of unknown origin suggested the inadequacy of staff to adequately investigate the causes of all fires. The number of lightning-caused fires is shown to be quite small, and undoubtedly many of the "unknown" fires were of lightning origin.

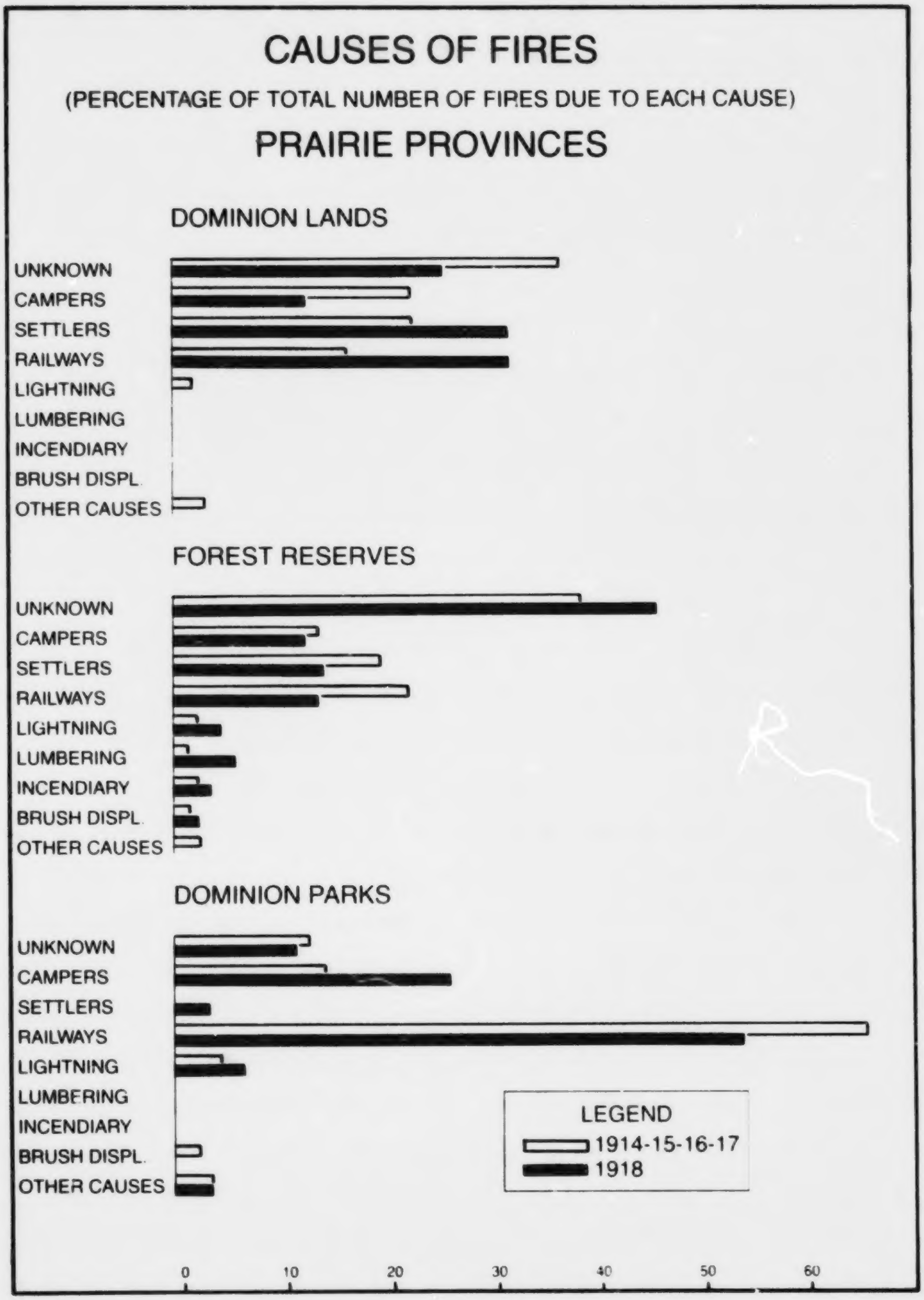


Figure 49. Causes of forest fires on lands administered by the Dominion Forestry Branch 1914-1918. (Lewis 1920)

Lewis also summarized the number of full-time staff in the prairie provinces. The declines in 1917 and 1918 were a result of wartime enlistment.

Administration	**Number of Permanent Staff**				
	1914	1915	1916	1917	1918
Dominion forest reserves	72	98	108	100	86
Dominion parks	23	25	29	33	37
Dominion lands	6	8	11	8	9
Railways	1	1	3	1	2
Total	102	132	151	142	134

The average size of ranger district varied from a high of 744,000 acres in 1914 to a low of 616,000 acres in 1916. The attention given to Dominion forest reserves in contrast to Dominion lands is obvious. In 1918, for example, the average size of a district in the forest reserves was 209,000 acres, while that on Dominion lands was 1.2 million acres, almost six times greater.

According to Campbell, the 1919 fire season was the most disastrous ever for forest fires since the establishment of the Forestry Branch, (Canada 1920a). Throughout the West, there was very little snow in the winter, and early spring brought an abnormal period of drought and continuous high winds. In Alberta and British Columbia the weather continued very dry all through the summer. It is interesting that apparently no reference to these fires, nor to the major fires in Ontario that same year which involved serious loss of life, was made in the House of Commons.

The extent of the 1919 fires in Alberta was great. Two in the Bow River forest caused by campfires covered over 1.45 million acres. The largest that year was in Saskatchewan, in the Battleford Fire Ranging District, which was reported to have burned over an area of 2.74 million acres between June 16 and July 18, 1919 (Canada 1920a).

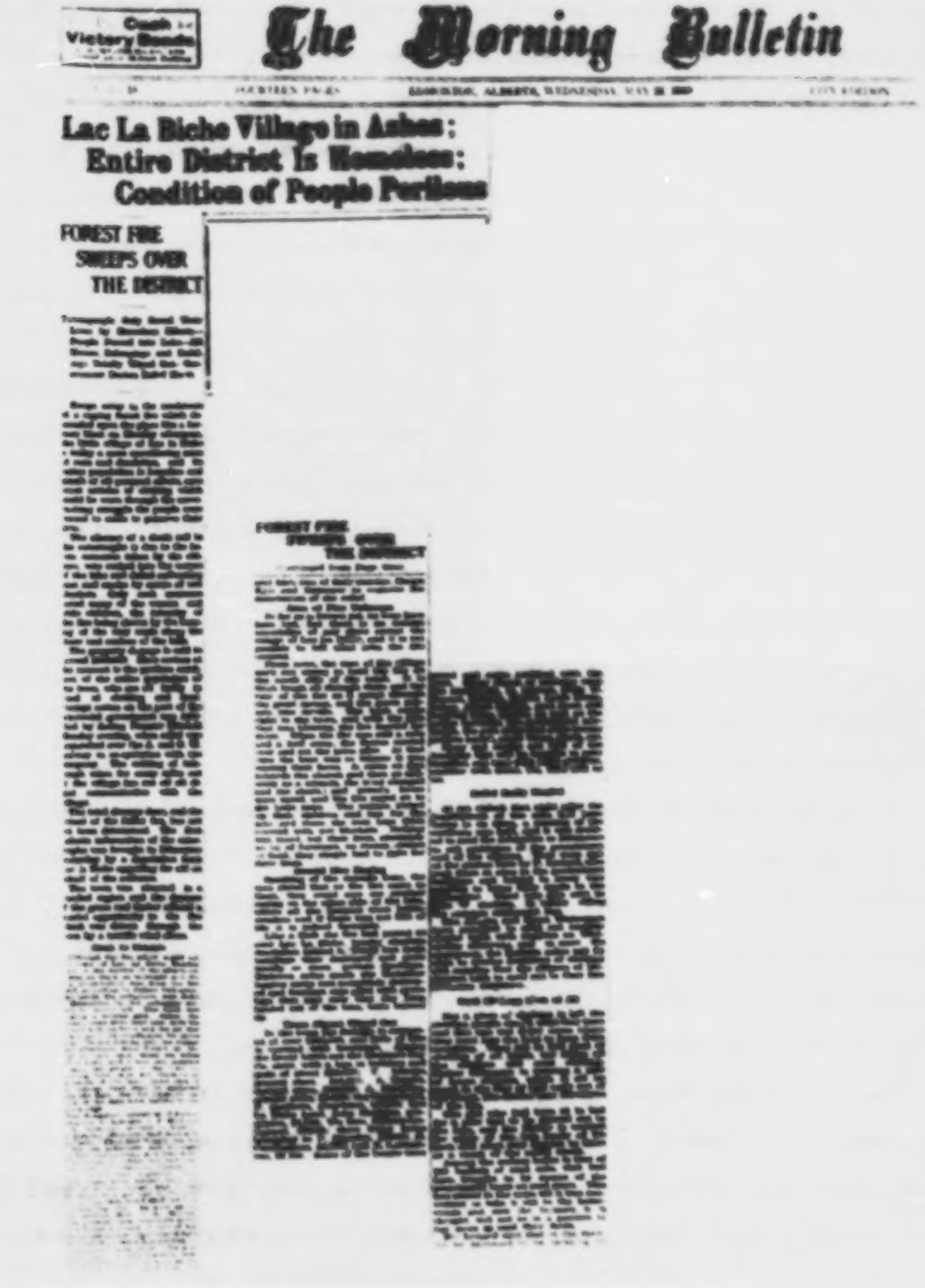
However, it now appears that the fire, or fires, burned primarily in late May and early June and may have affected over seven million acres in eastern Alberta and Saskatchewan. The town of Lac La Biche, Alberta, and two communities in Saskatchewan were destroyed by those forest fires (Murphy 1983). Maurice Destrube, a homesteader at Rife, Alberta (Destrube 1981), described the fire burning around their farm, "a veritable inferno", and mentioned an Indian family overtaken south of Cold Lake and "totally wiped out". The great area affected illustrates the propensity for large fires in the boreal forest when fuels and weather combine adversely.

Finlayson cited the experiences of 1919 to show the great value of the telephone as a means of communication, and also emphasized that if fires were to be reached in time to suppress them, roads and trails must be provided for speedy travel. He noted that several of the fires which did the most damage occurred in remote districts and the time lost in reaching those fires allowed them to gain headway. He described the fact that so many fires started as a consequence of human carelessness, and expressed the belief that one of "the most effective reforms in regard to forest fire prevention will be achieved when the public is seized of the great danger of the careless handling of fire in the woods, and of the great extent of the loss forest fires cause".

Compounding the problem was that 1919 was a year of strikes and labor troubles, making labor difficult to secure to fight fires. An interesting side effect of a coal mining strike in Alberta was that the railway had to use inferior coals which resulted in more fires, particularly on steep grades, and in spite of the use of spark-arresting apparatus on the locomotives. Finlayson also commented that the miners on strike spent much of their time in the bush which, he believed, caused more fires from that source as well.

Campbell (Canada 1920a) reported that revenues received from the forests were as yet small compared with the amount required for forest protection and management. Still, he noted that they were increasing steadily and, referring to recent increases in revenue, he felt the expenditures were justified and that, in time, the forests would make financial returns similar to those of European forests. It is evident that direct revenues from the forests remained a point of concern.

In the June 8, 1920, debates in the House (Canada 1920b) the Canadian Forestry Association was cited for its excellent public education work in the matter of forest



The Morning Bulletin

Cash Victory Bonds

Lac La Biche Village in Ashes:
Entire District Is Homeless:
Condition of People Perilous

FOREST FIRE
SWEEPS OVER
THE DISTRICT

Figure 50. Edmonton Bulletin headline about the destruction of Lac La Biche in the 1919 burn.

conservation. Particular reference was made to the association's lectures and the exhibition car which travelled the country reaching both children and adults who were "in sad need of instruction.....in the necessity for forest conservation." It was recommended by a Mr. Power that their grant of $4,000 per year be substantially increased.

Fire investigations were apparently stressed in 1920. Campbell (Canada 1922) reported:

> "It is always of considerable value to know how fires originate, as such a study makes possible the application of preventive measures. For a considerable number of years past it has been necessary to designate the cause of a large percentage of fires as 'unknown'. The percentage of unknown fires for the last season, however, shows a considerable reduction, which may be taken as an indication of material improvement in the attention given to study of the fires."

He went on to state that fires caused by railways reached a total of 45 percent and lightning fires 10 percent, but that the relative percentage of other fires remained approximately the same. In 1920, 20 percent of the fires were still in the unknown category.

The major innovation in 1920 was the inauguration of airplane patrols, one in southern Alberta and the other in British Columbia. These were made possible through the Air Board of Canada. The southern part of the Rocky Mountains Forest Reserve was selected since there were better communication facilities there to utilize the airplane reports. The first patrol was made September 7 since there was a delay in providing the aircraft. The major intent was to use the aircraft for detecting fires, but the first application was a daily reconnaissance of a fairly large fire in the Bow River forest. The report stated that by use of airplanes the reconnaissance of the fire was made in half a day. Without them it would have taken a week's trip with saddle and pack horses. Some aerial photographic work was also tried, but the lateness of the season resulted in long shadows. In subsequent years two aerial patrols were carried out almost daily during the summer, with one going south over the forest reserve to the international boundary, and one going north to the divide between the Red Deer and Clearwater Rivers. Rangers also used planes at various times to make reconnaissance of fires. The use of aircraft was continued and expanded through to 1930. Kitto (1930) described the use of aerial patrol in the Peace River country starting in 1928, from a base at Grande Prairie.

Figure 51. Aircraft base at High River - planes first used on fire patrols in 1920. (Alberta ENR)

In the following year 1921, (Canada 1923) the Alberta aircraft base was moved from Morley to High River. In Alberta, the annual report stated the aircraft were equipped with "wireless telegraph apparatus". From the aircraft, the news of the discovery of a fire could be sent by wireless to the base at High River from which it could be telephoned to the ranger station. Huestis (1983) commented that this was not the case in his experience, however. While he was stationed in the Crowsnest Forest, the patrol plane had to land at Pincher Creek to deliver messages, not having a radio. When the wind was strong he and an assistant had to grab the ends of the wings to keep the plane on the ground.

It was noted that aircraft were particularly efficient on days when a smoke haze rendered it impossible to locate fires visually from lookout stations. Campbell wrote:

> "In all the provinces in which the aeroplanes were used the morale effect of these patrols was most salutary. Campers, settlers burning brush, and holiday excursionists from the cities were all made more careful in handling fire by the passing of the aeroplane overhead. Cards printed with suitable messages were carried by the airmen and dropped over camps and picnic parties, etc., and in certain cases special trips were made to drop these messages over fairs and sports meetings."

The district forest inspector for Alberta, C. H. Morse, reported that in 1921 (Canada 1923) there was a remarkable increase in the number of fires caused by settlers - rising to 45 percent in the districts outside the forest reserves. He noted that during the fall of 1921 the smoke was so dense north of the Red Deer River that it was very difficult to detect new fires. Many settlers had crops and buildings burned by their own or their neighbor's fires, and even towns were endangered at times. In Edmonton, he wrote, the city fire department had to make repeated trips to the outskirts of the city to extinguish fires spreading from the brush country. Prosecutions resulted in 18 convictions, one of which included a jail sentence. It was hoped that those prosecutions would have a salutary effect.

Johnstone (1973) commented on three important fire-control developments initiated in the Kamloops, B.C., district by D. A. Macdonald in 1921 upon his return from the war.

> "..... the first was a mountain lookout cabin, which set a new standard of efficiency and economy of construction. Then came a fire-control plan in far greater detail than had yet been attempted. Finally, there was the crucially important establishment of the first seasonal forest ranger school."

> "It had long been recognized that the forest ranger was the vital cog in the machinery of forest protection and maintenance. In European countries, there were facilities for the training of forest rangers; in Canada, there were none. Macdonald's school was long overdue."

The year 1921 saw the dissolution of the Commission of Conservation. Johnstone (1973) observed that it had become increasingly apparent that the government of the day did not share the views of the government of 1912 about the need for a strong conservation policy. Several of the foresters employed by the Commission of Conservation transferred to the Forestry Branch.

A major event in Dominion-provincial cooperation finally took place in 1921 when the Alberta legislature amended the provincial Fire Act. Since this was the act under which Dominion forest rangers worked outside the forest reserves, the new legislation was of great importance. The major features were that Dominion forest and fire rangers were specifically named as *ex officio* fire guardians under the act. The lieutenant-governor in council was empowered to declare certain portions of the province to be areas of special forest fire risk and to make regulations concerning them. The powers of fire guardians were considerably increased and penalities for infraction of the act were made more severe.

1922 was another serious fire season in Alberta and British Columbia. In Alberta the season was at least as bad as 1910 which had hitherto been considered the worst (Canada 1924). The actual hazard was judged to have been greater because of the great increase since 1910 in settlement, railways and backwoods travel. A total of 1,758 fires were reported in Alberta, only 170 of which reached a size of more than 10 acres. There was closer cooperation from the railway companies, with the result that few of the railway fires did any serious damage. Seventeen persons were convicted under the provincial Fire Act.

Within the Forestry Branch a forest research division had been established, engaged largely in investigations of the problems of handling cutover and burned-over areas. Forest surveys continued, and seeding and planting projects continued for the fourth year - in Alberta 86,000 spruce and pine were planted that year.

In the spring of 1923 R. H. Campbell resigned. Johnstone (1973) referred to a severe accident which Campbell had suffered in 1919, and observed that T. W. Dwight had been functioning as acting director since then. Dwight left in 1922 to take an

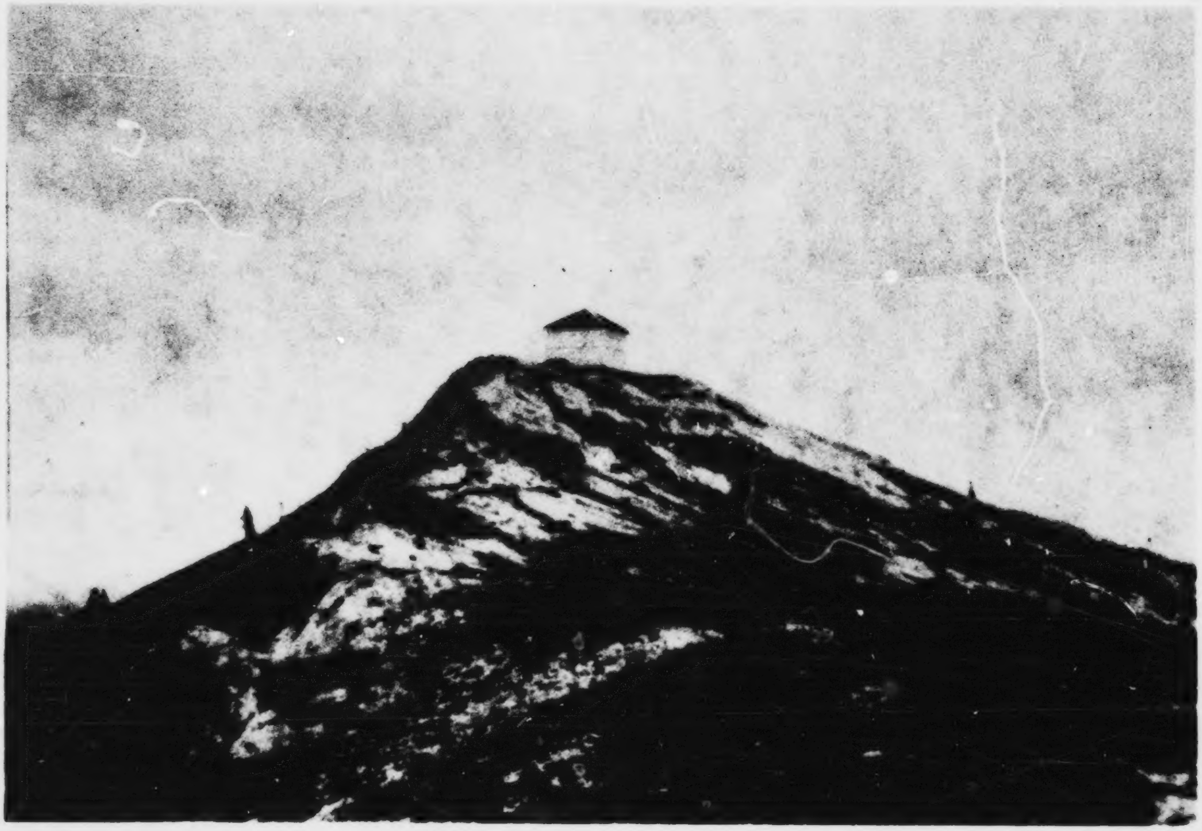


Figure 52. Coliseum lookout - one of the early mountain lookouts near Nordegg. (Alberta ENR)

Figure 53. Packing poles for construction of coliseum lookout. Lumber was commonly packed in a similar way. (Alberta ENR)

appointment at the University of Toronto. E. H. Finlayson, who had subsequently served as acting director, was appointed director in 1923.

Ernest Herbert Finlayson was born in Toronto in 1887 and graduated from the University of Toronto where he studied engineering and forestry. He worked for the federal Forestry Branch during the summers of 1910 and 1911 on boundary surveys of the Rocky Mountains Forest Reserve. Upon his graduation in 1912 he was appointed inspector of fire ranging and, in Johnstone's view, did a major job of reorganizing the fire ranging services on the prairies and in the North West Territories. He also organized and supervised the railway fire protection work in the West for the Board of Railway Commissioners. In 1914 he succeeded W. N. Millar as district forest inspector of forest reserves in Alberta, the largest and most important of the administrative units in those days. He was moved to Ottawa in 1920 as the forest protection specialist. Johnstone also noted his effective involvement with the Second British Empire Forestry Conference held in Canada and with the Royal Commission on Pulpwood. In Johnstone's view Finlayson was an excellent organizer and was committed to the operational function of the Forestry Branch. However, he was unsympathetic to research.

As a sequel to the British Empire Forestry Conference convened at Ottawa on July 25, 1923, a joint federal and provincial conference on forest fire protection was convoked in January 1924 by the minister of the Interior (Canada 1925). It was attended by the provincial ministers charged with forest administration, together with their chief forest officers. The forest fire problem in all parts of Canada was "exhaustively discussed", and the conclusions were summarized in a series of resolutions designed to serve as a basis for future action. The nature of the resolutions was not indicated. The Canadian National Railways operating department also held a conference on forest fire protection at which many of the provincial and federal fire protection officers were present, but no details were given in that report either. In the national parks, fire was given the same sort of attention, with improvements to the fire patrol system, trail and forest telephone mileage increased, a number of additional cabins built, and automotive patrols added along the highways.

The economic value of the forests of the prairies was given a boost in 1925 with the granting of a pulpwood concession in Manitoba to the Manitoba Paper Company

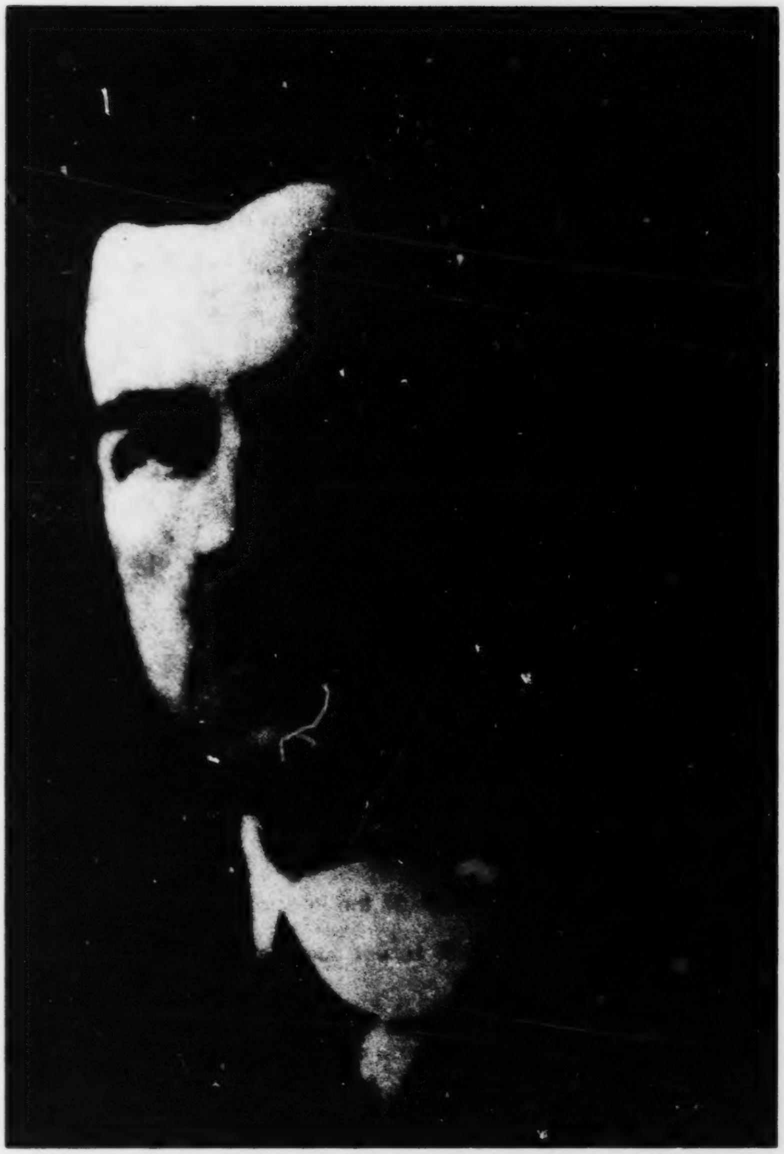


Figure 54. Ernest H. Finlayson, director of the Dominion Forestry from 1924 to 1936. (Canadian Forestry Service)

(Canada 1926). The administrative responsibilities for that sale had been delegated to the Forestry Branch. Concurrently, the "bringing in" of the Royalite No. 4 well in the Turner Valley field in Alberta was mentioned, an event which was to greatly affect subsequent federal-provincial relationships.

In 1925, the Forestry Branch took the lead in "bringing to the attention of the people of Canada the seriousness of the situation with respect to forest fire losses" through designation of a "Save the Forest Week" in mid-April. In 1925 (Canada 1926) a National Advisory Committee was formed which represented the press, wood-using industries, service clubs, and many other national organizations interested in forest conservation. That committee took charge of the organization and development of the fire prevention campaign, done cooperatively through several provincial forest services and provincial committees. Widespread use was made of radio, and the prime minister and the provincial premiers or their representatives broadcast from radio stations throughout the country. That program was to continue for five years.

It is interesting that in the report for 1926-27 (Canada 1927) the deputy minister felt compelled to state:

> "Although wide publicity has been given to the policy which the department has formulated with regard to the reserving of forest areas on federal lands for permanent timber production, a misconception still prevails in some quarters that the timber within a national forest is preserved against use. Nothing could be more removed from the actual facts; all the timber within these areas is available for disposal but its sale, whether for commercial purposes or for settlers' use, is necessarily subject to cutting restrictions and requirements designed to ensure the reproduction of the more valuable species, to improve growing conditions for the timber left uncut, and to reduce waste and fire hazard to a minimum......."

It might be surmised that this response was a manifestation of growing provincial concern over federal control of the natural resources of the prairie provinces.

Studies of fire weather were described for the first time, and an appreciable understanding of the principles of fire behavior was indicated in the preamble comments:

> ".....Lightning is the only meteorological factor which may itself start fires, but precipitation, temperature, wind, and the relative humidity of the air are the weather factors which influence the behaviour of all forest fires which start from any cause."

Weather recording stations were operated by forest officers in the West, including Alberta, and the data were used to try to determine the relationship between weather factors and forest fires. The Forest Research Division made its first entry into the field of forest fire research with studies at Petawawa to try to determine the rate at which the materials on the forest floor "reach different degrees of dryness or inflammability under varying weather conditions". Reference was also made to the cooperation of the Meteorological Service to secure forecasts of the approach of weather which would materially affect fire hazard, in order to help with fire control planning.

These fire-weather developments were elaborated on by Johnstone (1973) who paid particular tribute to a young civil engineer, J. G. Wright, who transferred to the Forestry Branch in 1922. In retrospect, Johnstone stated, Wright was one of the giants that the branch produced, and was the father of forest fire research. Wright was instrumental in obtaining forecasts, setting up weather stations, and later developing a system for describing forest fire danger which was based on his research on fire and weather relationships.

There was a continuing buildup of publicity programs. Lapel tags in the shape of a maple leaf carrying fire-prevention messages were widely distributed as a first "tag day". Log cabins were built on the grounds of the Calgary and Edmonton summer fairs in which displays and fire-prevention messages were presented.

The report of the national parks also dealt with the problems of forest fires, and referred to a convention of the park superintendents and supervising wardens held at Banff, with the supervisor of forest protection as chairman. The objective was to improve fire control capability. However, the report (Canada 1927) contained an interesting observation about a beneficial fire effect, the subject of which would come to prominence about 50 years later in discussions on what the role of fire should be in national parks. The report described a fire along the Banff-Windermere highway which burned for a period of about six weeks under high hazard conditions. A force of 200 men "fought desperately to protect the scenic beauty of the Banff-Windermere highway". The fire burned about four miles along the highway. The report then stated:

> "Although the loss was considerable, it is believed the scenery along the road will not be seriously impaired. On the contrary, once the new growth has restored the green, it is probable that the opening up of the forest, affording as it does wider and more distant vistas, will be an improvement from the scenic point of view."

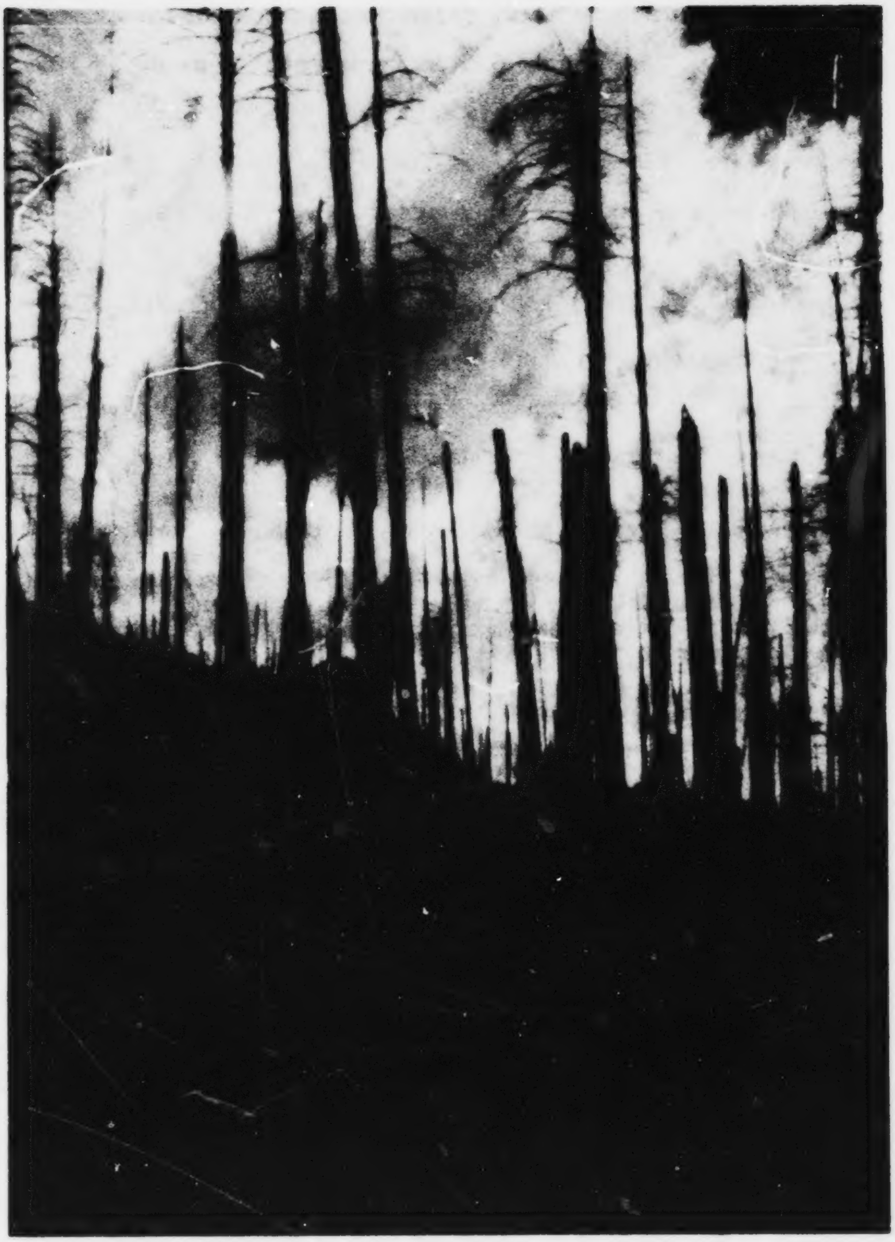


Figure 55. The 1926 burn along the Banff-Windermere highway was judged a loss by the park superintendent although it was judged "an improvement from the scenic point of view." (Provincial Archives of Alberta P 4732)

The deputy minister, W.W. Cory, presented a wide-ranging review of the role of his department on the occasion of the 60th anniversary of confederation in 1927 (Canada 1928). He commented that agencies such as the Forestry Branch, in addition to administrative work in its own field on Dominion lands, also collected and combined data of general utility and conducted educational campaigns which presented Canada to the world as a well-knit unit, and not merely as a number of individual provinces. The remark may also have been preliminary to defining a new role for the department, as provincial agitation for resource control was increasing.

The results of publicity activities were mentioned by both the deputy minister and director of forestry. The deputy minister stated:

> "Over a period of years the Forest Service has urged and done much in the interests of forest protection through intensive publicity campaigns, and a profound impression has been made on the public conscience to resist carelessness in the use of fire. The results are decidedly encouraging and there is ground for the feeling that the public mind is being seized of the urgent necessity for forest conservation."

The director of forestry, E. H. Finlayson, referred to the considerable significance to Forest Service administration of this more enlightened public attitude, which recognized the importance of science in the development of natural resources. Reference was also made to the fire permit system inaugurated by the provincial authorities for burning of settlers' slash which "now seems to be working pretty well".

A major development in fire detection on the Rocky Mountains Forest Reserve was the start of a system of lookout towers. This was a logical extension of the general construction of improvements which had been going on steadily since the reserves were established, designed to enhance the fire control efforts. Earlier improvements included construction of roads and trails, telephone lines, headquarters buildings and cabins,and fireguards. Huestis (1983) commented that the Forest Service did a good job of building roads to the ranger stations, but not beyond them where most travel was by horse.

In the 56th annual report of the Department of the Interior (Canada 1929) the remarks of the deputy minister reflected an evolved role for the department:

> "The aim of the Department of the Interior is to encourage the sound development of the natural resources of the Dominion by bringing to bear on the problem the skill of experience backed by scientific investigation. The activities are broad and cover a multitude of diverse duties. Almost every phase of the nation's life is represented in some degree......"

Figure 56. Early roads on the forest reserves commonly went as far as ranger stations, with horse trails leading out from there. (Alberta ENR)

> "..... the Dominion Forest Service co-ordinates and encourages general forest conservation and forest research throughout Canada in addition to protecting federal timber lands from destruction by fire and managing, on a sustained yield basis, the forest reserves in Manitoba, Saskatchewan, Alberta, and the area under Dominion control in British Columbia."

Cory noted that under instructions from the minister the officers of the department were studying the question of the possibility of a formal stock-taking or inventory of Canada's forest resources. He also remarked that in Alberta the fire hazard was unusually severe and prolonged, but that improved organization with better equipment and training of fire-fighting forces kept down fire losses.

The relatively high profile of forestry in Canada at this time was indicated in an exchange of speakers during the annual "Canadian Forest Week" which in 1928 coincided with that of the United States. Five prominent Canadians spoke to gatherings in the United States including Hon. Charles Stewart, minister of the Interior; Hon. J. D. MacLean, premier of British Columbia; Hon. William Finlayson, minister of Lands and Forests for Ontario; Hon. T. A. Burrows, lieutenant-governor of Manitoba, and Rt. Hon. Arthur Meighen, former prime minister of Canada. The United States reciprocated by sending notable speakers in return, including Colonel W. B. Greeley, chief forester. Colonel Theodore Roosevelt, Jr., son of President Theodore Roosevelt, was to have spoken, but became ill before he could do so.

Although not mentioned in the annual reports of the Department of the Interior, discussions about transfer of the national forests of western Canada were being conducted at least since the mid-1920s. Johnstone (1973) described Finlayson's efforts to head this off:

> "..... but he failed to convince the politicians and the Liberal Party. The King administration was determined to rid itself of federal responsibility -- and cost for the forest reserves. The federal government could save at least a million dollars a year by getting rid of the national forests, turning them over to the western provinces, to which they actually belonged according to the terms of the British North America Act. Let the provinces foot the cost. Though R. B. Bennett's succeeding government was blamed in the Service for the transfer of the forest reserves, the deal was made by the previous King administration; Bennett merely saw that the Forest Service appropriation was cut accordingly.
>
> "So, despite a fierce last-ditch battle waged by Finlayson onward from 1926, when he began to recognize the mounting opposition, and despite the outstanding administrative job that the Service had done with the reserves,

agreements were signed with the western provinces in 1929 for the return of their natural resources, including the forest."

Johnstone (1973) returned to this subject later in his text, reiterating Finlayson's opposition to the proposed transfer, and citing a final memorandom on the subject.

> "... To say merely that Finlayson had fought hard to retain the forest reserves as national forests was an understatement. He had fought like a tiger, beginning in 1925, almost from the time when he was named Director, and a long series of detailed memoranda setting out with carefully reasoned arguments and supporting statistics just why the federal government should retain its national forests are in the record bearing testimony to this fight. His final memorandum, addressed to Acting Deputy Minister R. A. Gibson and dated December 6, 1929, sums up a carefully reasoned position:

"Re - Transfer of Natural Resources

"Over a period of five years we have submitted numerous reports dealing with the natural resources question. In all of those reports we have emphasized:

1. The seriousness of the timber situation in Canada, due to exhaustive methods of exploitation and devastation by fire; and that this situation comprises a national problem far transcending provincial considerations.
2. That the provinces, if they take over the national forests, cannot possibly finance the intensive administration required, and that failure to do so will further aggravate the very serious situation which exists.
3. That, in the premises, the transfer of these areas by the Dominion to the provinces is contrary to the national interest, and if consummated will constitute a shifting of responsibilities which recipient administrations will be unable to meet.
4. That although the transfer of such responsibilities may temporarily, and in relatively small measure, reduce federal expenditures, it is only a question of time until the federal government will have to financially aid the provinces in their forestry programs.

"The past five seasons showed all too clearly that Canada has got to provide more intensive protection. Of the four western provinces, British Columbia is the only one that at present has direct responsibilities in forest protection, and of such provinces is probably the most advanced. Nevertheless, in that province the degree of protection applied on provincial lands does not approach that on federal lands; consequently the losses were relatively much greater.

"It is surely the responsibility of the federal government to give the lead to the province on forest policy and administration. This lead cannot be properly given, nor can the provinces logically be expected to accept such leadership, unless definite administrative functions be exercised by the Dominion. Therefore, even if the entire national forest area were not retained, it is absolutely essential that an appreciable part of it should be, in order that the necessary demonstration, experiment and research may be provided.

"We have on many occasions emphasized the extent to which the federal government of United States participated in and gave assistance to state forestry effort. Far from decreasing the national forest area in that country, the area is being constantly increased. Also, the reaction of the past serious fire season in that country is not to throw the load upon the individual states; rather, there is a general move of all interested bodies in the land to increase the federal responsibility.

"In the case of Alberta, and after most careful enquiry into all phases of the matter, it was definitely agreed that Canada should retain and administer the Rocky Mountains, the Cypress Hills and the Cooking Lake Forest Reserves. There was absolute agreement of the soundness of the principles involved.

"In Manitoba, the province is willing to leave the reserves under federal control. But apparently there is disinclination on the part of the federal government to retain such control, presumably on the ground that national forests have not so far been established in the older eastern provinces. To this there are two answers -

a. That the eastern provinces are much more densely populated, and hence have sources of revenue not enjoyed to the same extent in the west.

b. Aside from funds, the very fact that neither Nova Scotia nor New Brunswick have even established provincial forest reserves is proof conclusive that weaker provinces are unlikely to observe the fundamental principle of forestry--permanent forests. Indeed, although Quebec and Ontario have for many years had forest reserves of a kind, it is only latterly that there is much evidence that they intend to administer them properly. It may confidently be stated that it is largely due to the fact that the federal service has built up these forest reserves in western Canada, and has administered them as such, that it has been possible as a result of national conferences to convince the provinces of the soundness of the policy.

"The preliminary negotiations with British Columbia also, indicated agreement on the part of that province that Canada should retain substantial areas as national forests.

"In the circumstances, it is necessary to urge upon the Dominion Government that the wholesale transfer of the forest reserves in Western Canada to the provinces would be a retrograde step; and that it is a measure which would definitely retard the advancement of forestry in Canada, at a time when the people of this Dominion are looking for advance rather than retrogression.

"In view of the fact that our views have been placed by the Department before the Prime Minister, we are justified in assuming that before any final decision is reached that matter will receive that consideration in Council which its importance demands.

Respectfully submitted,

E.H. Finlayson."

But, for the fiscal year ending March 31, 1930, the deputy minister of the Interior was able to report that considerable advance was made toward completing of arrangements for the transfer to the western provinces of the natural resources within their boundaries (Canada 1930). Representations and discussions had been going on for some years, but not discussed in annual reports. The administration of the resources remained wholly within the Department of the Interior throughout the 1929-30 fiscal year.

Alberta experienced another serious fire season in 1930 but credit was given to the fire protection organization for minimizing the losses. The director of forestry noted the new role with respect to the Dominion Forestry Branch:

"The change will enable it to concentrate on investigation, research, and experiments, and to give leadership to the provinces and the forest industries.

> In particular this Service will be in a position to avail itself of the additional opportunities which are presented for investigation into basic forest-protection problems, for silvicultural research into the rates and conditions of growth of Canadian tree species, for forest-products research looking to the closer utilization of Canadian raw materials, and for the more intensive prosecution of the national inventory of forest resources now actively underway."

Huestis (1983) observed in passing that the province did not get as much of the help they needed from the federal government in research on practical forest protection problems of particular concern to the Alberta Forest Service.

Johnstone (1973) cited an internal service memorandum which summed up the event of the transfer:

> "In one swift move the entire administrative functions of the Service was removed with regard to the protection and management of the forest lands in the west. Some idea of the valuable work done by the Forest Service over the previous 30 years in building up a careful and extensive administrative system for these (23 million) square miles of national forests was evinced in the action taken by the newly established provincial forest services. In all three of the prairie provinces the Dominion timber regulations were adopted almost without change. The 'Timber Scale' method of disposal developed by the Forest Service also found general favor and was applied in all cases throughout the west. One painful aftermath of the transfer was the release of some 400 members of the Dominion Forest Service employed in the western districts. Many, however, were taken into the provincial services."

Finally, the report of the Department of the Interior for the fiscal year of 1930-31 (Canada 1931) noted that the transfer to the western provinces of the natural resources within their boundaries, for which preparation had been underway for many months, was consummated. The date of actual transfer varied among provinces. It was effective Oct. 1, 1930, for Alberta. The report of the deputy minister noted that in addition to its important statistical, scientific and conservation work in all the provinces, the Department of the Interior still directly controlled the natural resources in an area of over 1.5 million square miles, nearly 40 percent of the land surface of Canada, embraced chiefly in the national parks and in the Yukon and North West Territories. It stated that "the attention of citizens in the last few years has turned, as was logical and inevitable, to our Northland."

7. ALBERTA 1930-1981

7.1 The Depression and Wartime Period 1930-1948

> "On October 1, 1930, the Forest Service of the Department of Lands and Mines, Government of the Province of Alberta, became responsible for the major forestry activities within the Province of Alberta. In line with this change, practically all the officials of the Service previously responsible for this work, under the Department of the Interior, were taken over by the Alberta Forest Service, the exceptions being principally those technical officers employed by the Forest Service of the Department of the Interior engaged in research work - research and investigative work being on the programme of the Dominion Service."

This was the opening statement of the first director of forestry for Alberta, T. F. Blefgen, in his first annual report for the fiscal year ending in March 1931 (Alberta 1932). Huth (1980) referred to apprehension among rangers over the transition, but according to him, "employees were transferred so smoothly from one government to the other that most didn't notice any difference".

The first deputy minister of the department was John Harvie who had started as a junior clerk with the federal government at the age of 19 in Lethbridge. He later became chief clerk in the office of the deputy minister of the Interior in Ottawa, so some of the federal operating philosophies undoubtedly prevailed. The new Department of Lands and Mines comprised five main branches - forestry, mines, lands, fisheries and waterpower (Huth 1980).

Blefgen was born and raised in Spokane, Washington and took a summer job in Alberta helping to remodel the Canadian Pacific Railway grade. During this time he became acquainted with employees of the McLaren Lumber Company with whom he later went to work as a clerk and time keeper at their camp near Blairmore after he completed high school. He learned to cruise timber and scale logs so the company later made him yard foreman and shipper. The local rangers became impressed with Blefgen's polish with horses and his obvious knowledge of the bush and the lumber industry, and urged him to join the Forestry Branch, which he did in 1911. As Huth described it:

> "The former logging camp clerk took hold of his new challenge with as much determination and eagerness as he used to display when mounting an unbroken cayuse. The only man to climb the ladder from assistant ranger to director, Blefgen filled the top position for 18 years until poor health forced him into an early retirement in 1948. Although an authoritarian manager, with little use for group decision-making, he endeared himself to the rangers by championing their causes and listening to their complaints."

With the transfer of resources Alberta took over the responsibility for protection and administration of 19,463 square miles of established forest reserves. In addition to this area, the Forest Service was responsible for forest protection in what was known as the Edmonton Fire Ranging District, comprising an area of 142,802 square miles (Alberta 1932). Besides effecting a smooth transfer of administration to the provincial system, one of the first requests to the new provincial Forest Service was to provide a means for the employment of single unemployed men in the city of Calgary.

A program was immediately developed on the Bow River forest. The work laid out for the various camps consisted primarily of improvements designed to better the protection and adminstrative efforts, including constructing firelines along roads and trails, improving roads, rebuilding bridges and culverts as well as installing new ones, disposing of slash resulting from ill-regulated logging operations, and some reseeding of burns. One of the projects was re-cutting of the forest reserve boundaries to serve as a fuelbreak to check fire which might endanger adjacent settlement, and to check against fires running from settlements into the forest. An integral component was training, thus providing another forerunner to the ranger training program which would later emerge. The program was expanded even as the organization proceeded, resulting in 18 camps employing 792 men with an additional 105 men in supervisory and service positions.

During that first report Blefgen reiterated the two major objectives for grazing within forest reserves; the maximum use of range without overgrazing, with a view to reduction of fire hazard during the summer season, and the placing of additional areas of grazing at the disposal of ranchers and farmers. This policy evidently resulted in a third benefit in public relations. Huestis (1972) later described these objectives on the Crowsnest and Bow River forests. He went on to explain:

> "One thing we had down there which we liked very much was that every rancher surrounding those hills was very careful with fire and knew exactly what he was up against if there was a fire because he lost his grazing for his cattle. At the same time it might get into the timber and raise Cain with the Forestry Branch. Any time we got a fire in that particular area the ranchers

Figure 57. T.F. (Ted) Blefgen with dog and a companion on the Rocky Mountains Forest Reserve before his appointment as Alberta director of forestry in 1930. (Alberta ENR)

> would come from every direction and bring their own tools, ploughs everything else, and they would dig in and work to beat the band and you never had to pay them. They just flatly refused to take any payment. They said, "We're saving our own bacon, why should you pay us for it." And this went on for years. Later on of course they demanded pay but the original was a co-operative deal. "Let's get in and get the darn job done and get it out."

Huestis also described two techniques used to put out grass fires which are interesting to relate.

> "And they had quite a unique way of putting a fire out in grass where they could use saddle horses. One idea was a chain, a logging chain, 2 or 3 of them hooked together. One guy would take one end and the other guy the other end and they would race along the fireline, one inside the line and one outside, and this chain would put the fire out as it was dragged along through the grass. At one time we didn't have a chain and one guy said, "Oh, that's all right." So he butchered a steer - split him down the middle and hooked a lariat on one front leg and one on the back leg and put the bloody side down and tore across the fire and it worked better than the chain."

The following years saw a broadening of responsibilities of the Forest Service by undertaking the administration of the Prairie Fires Act, assumed from the Department of Agriculture (Alberta 1933). In so doing, the Forest Service gained more direct control of the fire situation, although it also assumed considerable additional work. The act was the basic legislation supporting forest protection on Crown lands outside the established provincial forest reserves, and was also the supporting legislation for fire prevention and protection throughout the province, excepting only cities, towns, villages, and national parks. The entire province was declared a fire district, and the use of fires for clearing lands and brush disposal was only allowed under permit. Permits were to be issued to the applicant only when proper safeguards were provided, and when weather conditions permitted. The importance of burning only under safe conditions was stressed as "absolutely essential". Combined with the fire permit system was a program of more stringent enforcement, which Blefgen believed was having a considerable effect in reducing the number of clearing fires.

On the other hand, Blefgen reported that the fire season of 1931 was possibly the most difficult one experienced by any forest protection organization in Alberta. A combination of high winds, low humidity and very dry ground provided ideal conditions for fires to start and spread, and as a result of unemployment, a great many incendiary fires were started by job-seekers. In that year 22 percent of fires originated from settlers, 15 percent incendiary, and 24 percent campers. A forest closure was invoked south of the

Bow River.

Individuals were appointed as honorary fire guardians under authority of the Prairie Fires Act to assist the Forest Service in many ways, and to provide for greater convenience in issuing burning permits. Those appointments carried no remuneration. The cooperation of officials of the Board of Railway Commissioners was also noted.

Unfortunately, despite this auspicious beginning the effect of the depression was making itself felt and the beginning of a 15-year retrenchment in Forest Service activities began. Blefgen in his report for 1932-33 (Alberta 1934) outlined the nature of the problem, the reason for retrenchment, and the resultant changes. It was clearly evident that he regretted the reductions in staff, and it is a credit to his tough-mindedness and stubbornness that the Forest Service was able to achieve what it did.

At this point the area of responsibility included over 14,000 square miles of forest reserves and about ten times that in the Northern Alberta Forest District (NAFD), for a total of 162,000 square miles. Blefgen described the difference between the two areas. The forest reserve (Rocky Mountains Forest Reserve) was set aside for forest purposes under the Alberta Forest Reserves Act, and the lands were unavailable for disposition under the provincial Lands Act. Since they were, in fact, permanently designated forest areas, it meant that improvements required for administration and protection could be of a fairly permanent nature, and that the organization would have in view a long-term protection scheme. He reiterated the importance of the forest reserve in connection with production of timber, natural regulation of streamflow, reduction of erosion, modification of local weather conditions, game and fish conservation, and provision of an attractive area for various forms of outdoor recreation.

In the Northern Alberta Forest District (previously the Edmonton Fire Ranging District), there were many areas of land suitable for agricultural purposes, although covered with timber in various stages of growth. In addition, it was seen that by far the greater number of timber operations would occur in this area. The major threat to the NAFD seemed to be from the large number of fires originating from land clearing operations, which were allowed to run unchecked. Since the area was in a state of flux between forestry and agriculture, the formation of an organization such as found in the forest reserve was not justified for the entire area. However, Blefgen did stress that in those portions of the district where the lands were used only for growing trees, adequate protection should be provided as quickly as funds would allow. In addition, he felt that adequate protection on other areas containing timber resources should be provided for the revenue they would produce until converted to agricultural production. Blefgen noted the lack of improvements or developments in the NAFD so essential to successful forest protection - no trails, roads, telephone or telegraph lines specially built to meet the need for forest protection, no fire detection other than by patrol, and insufficient equipment. The distinction between the forest reserve and the NAFD was to persist from 1930 until the 1960s. The relative severity of cutbacks during the depression years also reflected the difference in perceived importance of the two areas.

One major change which was made in 1932 (Alberta 1934) was the transfer of authority for timber operations from the Lands Division to the Forest Service. This made it possible to transfer a number of timber inspectors to the Forest Service who were then incorporated into the organization. This step represented the first administrative uniting of forest protection and timber management responsibility. However, it was apparently not until three years later that it became operationally effective.

The reorganization, made with a view "to providing for greater economy of operation", meant substantial reduction in staff numbers on the forest reserve, changing a number of permanent employees to seasonal, and eliminating some positions. The Lesser Slave Forest was withdrawn from reserve status, and placed within the Northern Alberta Forest District where "personnel organization as to area covered, period of employment and remuneration (were) placed on a footing common to the Northern Alberta Forest District". The N.A.F.D. was reorganized from four to eight districts. While Blefgen believed that timber inspection work was better off than before, much remained to be accomplished on protection work.

The resulting reorganization consisted of eight permanently-employed timber inspectors and 48 seasonal rangers on the 147,825 square miles of the Northern Alberta Forest District. Staff on the forest reserve included five permanent rangers and 42 in seasonal positions to manage 14,409 square miles. The average area per ranger was 3,080 square miles in the NAFD in contrast to 306 on the forest reserve. In spite of the contrast, Blefgen's point was that staffing was quite inadequate on both areas.

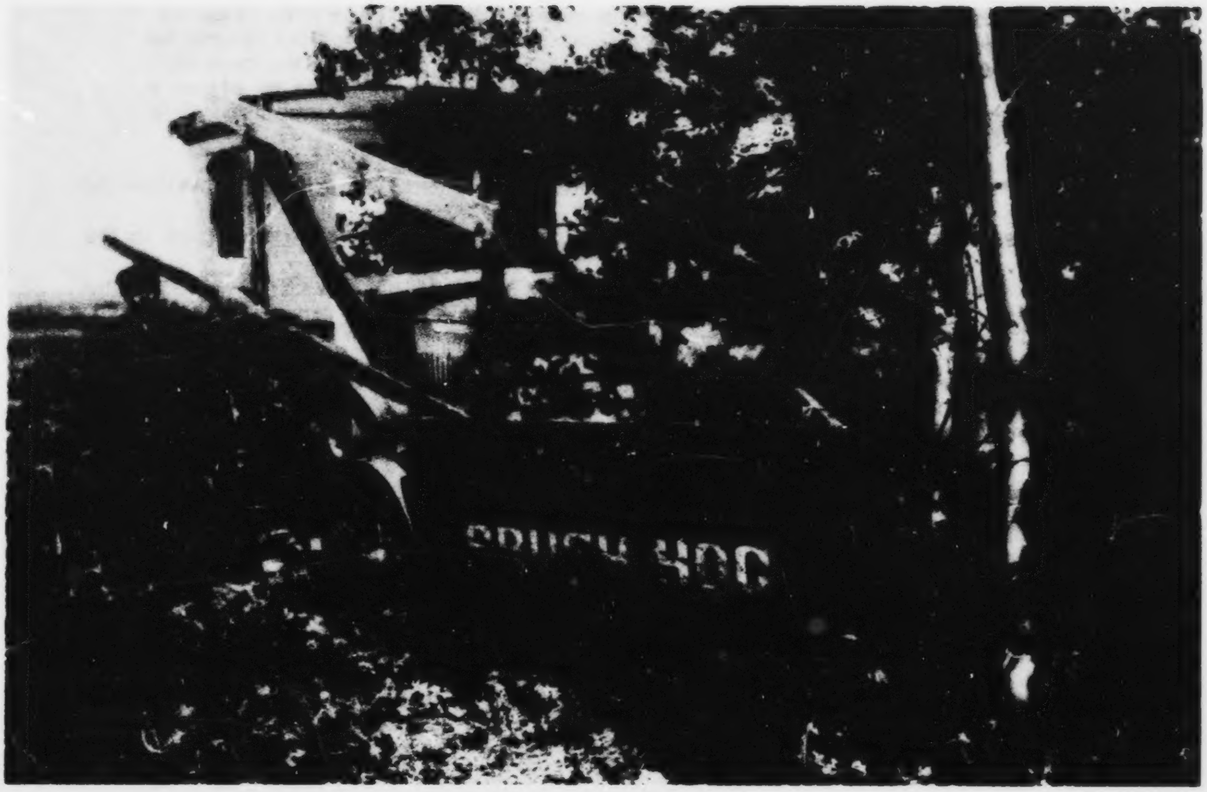


Figure 58. Land clearing for agriculture and brush burning posed perennial forest fire problems. (Provincial Archives of Alberta A 7753)

> "And so, Blefgen started in his new job with virtually no money in the treasury. Instead of being able to build the Forest Service into the effective unit he wanted, he had to put his energies into finding ways of running the operation with fewer and fewer dollars...... by April, 1932, he was able to effect a number of cost reduction programs...... this move cut the number of field staff by more than one-third......" (Huth 1980)

Blefgen stressed fire prevention in his report for 1933 (Alberta 1934). Within the forest reserves, control of travellers was exercised, but always with due regard to the freedom and enjoyment of the individual. He stated that all forest travellers were required to secure camping or travelling permits which were issued free and were available at various registration points. The philosophy behind campground construction was also explained (Alberta 1934):

> "In the more popular camping districts campgrounds are being improved. Debris and underbrush is removed, and in some instances safe fire-places have been provided. This development will gradually have the effect of segregating camping to suitable and safe campgrounds. A further improvement will no doubt be the restriction of open fires to authorized camp grounds."

He noted that control of human activities was much more difficult in the Northern Alberta Forest District, brought about both by the basic legislation affecting the use of those lands and by the scant field organization. Permits for burning were required from April 1 to December 1. They were available free from rangers, officers of the Royal Canadian Mounted Police, and honorary fire guardians. Enforcement of the permit system was done primarily by ranger patrol through settlements adjacent to forested areas, but employment of extra patrolmen during dangerous periods in many fire ranging districts had to be curtailed because of budget cuts. The Forest Service was responsible for fires in the forested areas and improvement districts, but municipalities were responsible within their own boundaries. Rangers were encouraged to work cooperatively with municipal officials to increase their effectiveness and to bring about the necessary improvements (Hutchinson 1938).

Blefgen observed improvement in the railway fire problem through the annual burning of right-of-way debris, the use of good grade coal, the extra widths of rights-of-way cleared through hazardous sections within the forest reserve, and the use of effective fire prevention appliances on locomotives.

Fire fighting equipment was a concern since the Forest Service had been unable to replace any which had been taken over on the transfer of resources. Although the annual

Figure 59. Fire ranger on patrol on the Peace River near Vermilion Chutes, 1936. (Alberta ENR)

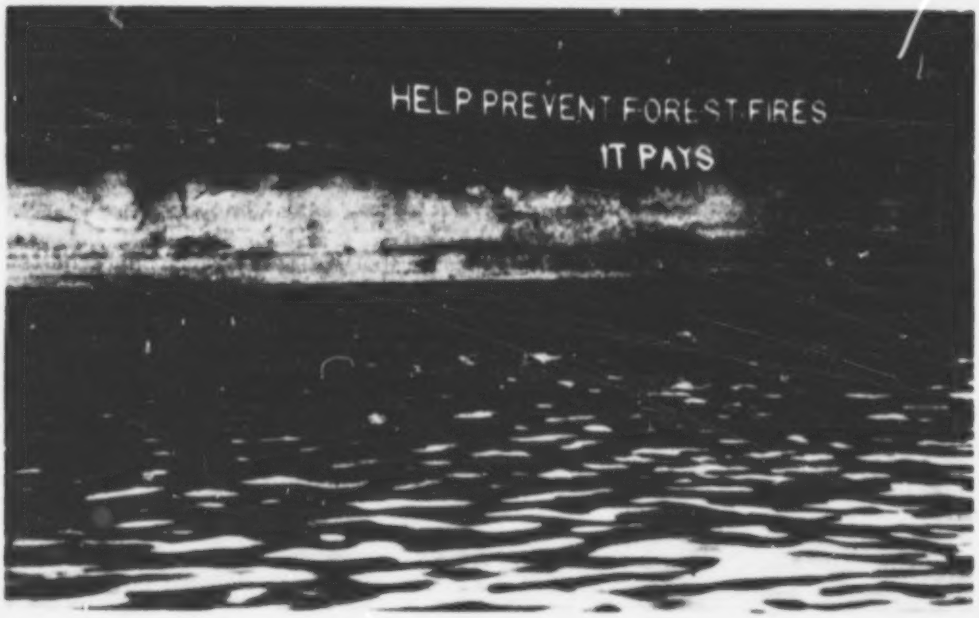

HELP PREVENT FOREST FIRES
IT PAYS

Figure 60. The Fire Sign became a prominent landmark on the lower Athabasca River. (Alberta ENR)

report added that much of the equipment was worn out, lost or destroyed. Huestis (1983) wrote that most of it was in good shape on takeover. Similarly, construction of new improvements was practically at a standstill, except for some projects undertaken by the unemployment relief crews. A cooperative arrangement was in effect between the Dominion Parks Branch and the Forest Service, the results of which were highly satisfactory and mutually beneficial.

Biefgen stated that protection was the most important duty of the field staff and the various phases of that work engaged more of their time than any other problem. However, he noted that:

> ".....suppression operations will not reach the degree of efficiency so much desired until a very considerable alteration is made in detection services, communication and transportation. An adequate supply of fire-fighting equipment is necessary with this objective in view, together with the employment of a well trained and supervised field staff in sufficient numbers to properly deal with the problem."

Succeeding reports invariably contained strong pleas for additional support for forest protection resources, but apparently to little avail. In 1934 (Alberta 1935) Biefgen stated that every effort was made to have settlers do all of their burning in a safe period, and that it was highly desirable that the rangers be on duty sufficiently early to take an active part in the spring burning campaign. This was needed so that they could encourage safe burning under permit and advise the new and often inexperienced settler. The following year (Alberta 1936) he was able to announce that seasonal rangers and assistants were employed "slightly in advance of the commencement of the fire season - a highly desirable proceeding". However, he indicated that for best results the ranger staff should be employed as soon as it was possible to travel after breakup. Regulations with respect to burning permits were not enforced in many localities due to a shortage of staff. Huestis (1983) added that the earlier hiring was a help, but that staff still had to be let go so soon in the late summer or early fall that late-season fires often left them without the help needed.

The results of the 1935 fire season were "outstanding", and Biefgen stated that it was probable that Alberta would never again experience a fire season during which fire destruction and fire-fighting costs were so low (Alberta 1937). However, he took the opportunity to caution that the satisfactory year:

> ".....is not explained by any large improvement in protection measures..... the explanation is due to regular rains...... together with vigilance on the part of the field staff. The results while exceedingly satisfactory do not point to a permanent improvement and until definite steps are taken, having in view a general betterment of field organization, no such permanency in improvement can be expected."

In that year the administration of all matters pertaining to timber on provincial lands, and all forestry field work, finally passed to the Forest Service, a move which was applauded by the director. The year 1935 also saw the Social Credit Party come to power in Alberta, led by William Aberhart who become premier.

In his remarks for the 1936-37 report (Alberta 1938) John Harvie, deputy minister of Lands and Mines, reviewed the seven years since the transfer of resources. He said he was particularly pleased to note that the department had produced surpluses in its budget in each of its first six and a half years of existence, including a surplus of almost $ 1 million during that year. He noted, perhaps unfairly, that in the years immediately before the transfer the Department of the Interior suffered a very considerable deficit in its administration of the same resources. However, the surplus to the department apparently had no beneficial effects on the Forest Service budget, in light of the depression and other provincial government needs. Huestis (1983) observed that they received no support from their minister, N. E. Tanner, either - their fundamental problems being lack of money and, with some exceptions, lack of ministerial support.

The fire season of 1936 in a large portion of the foothills and mountain sections was very severe, and Blefgen took the opportunity to note the "immediate and startling comparison" to the previous year. He also reported an "appalling carelessness" in the use of fire and a callousness or apathy toward losses thus caused. He emphasized that as long as a minimum field staff was employed, and largely employed only seasonally and for an absolute minimum length of season, heavy fires were bound to occur.

On a positive note he reported the transfer of the Game Branch from the Department of Agriculture to the Department of Lands and Mines. He commented on the similarities of interests and qualifications of staff and possibilities for integrated work activities, which it may be presumed would have included enhanced enforcement of fire regulations. He particularly pointed out that the wildlife habitat and the activities of hunters and trappers were directly related to forest protection. He believed that the change in field administration of the Game Act within forested territory to come under forest

Figure 61. Early fire fighting training exercise near Slave Lake organized by Ted Blefgen. (Alberta ENR)

officers was a happy one and promised well for the future.

Two of the major 1936 fires in Alberta crossed the continental divide from British Columbia. One came from the Flathead River Valley into the Castle River Valley, the other from the Elk River Valley into the Highwood River Valley. Substantial discussion was devoted to these events, both in the fire reports and among staff of both forest services, laying the groundwork for future inter-provincial agreements. The Pass Creek fire which ran into the Castle valley, and the Highwood fire are graphically described in the respective fire reports (Kovach 1936, Wileman 1936). The problems of access, mobility and manpower compounded by fast-spreading fires burning under severe weather conditions provide a perspective against which to judge future administrative actions. Fighting fires under those conditions was a hazardous business. A Pass Creek fire crew was feared lost when the fire blew up, but the men were able to escape to a rock slide as the fire went over them. The Highwood fire crew had to retreat from the high valley on continental divide to avoid getting trapped by new fires along the Highwood River which had spotted over them from the Elk fire.

The access problem had been highlighted in the Pocaterra fire in the Kananaskis Valley three years earlier. C.G. McKenzie (1933), the ranger, reported that it took four days to get men and take them to the fire using horses, giving the fire a good head start. That area is now part of Kananaskis country and is popular for recreation on a day-use basis from Calgary.

Blefgen's remarks about involvement with game activities were perhaps anticipatory. He reported with "genuine regret" and evident bitterness the next year (Alberta 1939a) that the administration of the Game Branch had again been placed under the Department of Agriculture, severing a direct connection between complementary phases of field work, in which forestry staff helped with game matters, and wildlife staff with forestry enforcement. He noted particularly, after the separation, that improvement in game administration matters was only brought about:

> "......firstly, by the provision of a much larger vote of funds and, secondly, by employing the funds to provide a greatly improved field coverage in the interests of the Game Branch administration and protection."

In referring to forest protection, he stated:

> "The protection of the forests of this province should be a more positive matter than that which now exists. The protection staff rather than being expanded has been decreased during the past several years when, in reality, the hazard from various forms of human activity has increased steadily."

One positive development that year was setting up the Youth Forestry Training Project under an agreement between the Dominion and province. This provided 50 percent cost sharing of a program designed to give unemployed and needy young men between the ages of 18 to 30 training and experience in elementary forestry. During the first year 60 men were enrolled and installed at a camp on the Highwood River. Experience in forestry projects and regular woods work was provided by employing the trainees on projects useful to the Forest Service, and giving a thorough grounding in a variety of subjects in order to fit them for possible employment with the Forest Service. As a result, several of the trainees were employed as assistant rangers and lookout men by the Alberta Forest Service, while a few were placed in other employment. That program continued for two years when it was replaced by another. This marked the beginning of formal training in forestry in Alberta.

Radio communications were introduced in 1938 (Alberta 1940), in combination with an extension of the lookout system in the Edmonton, Edson, and Athabasca Divisions. Blefgen was pleased to point out the advantages of better detection and quicker communication - as soon as staffing levels became adequate to take full advantage of them. Radios were installed in five recently-built towers, four of which were of wooden construction, and one of steel. At this time wages for firefighters were 15 cents per hour with board furnished (Alberta 1939b).

The outbreak of World War II in 1939 stimulated forest-related activities, but resulted in even further reductions in manpower. Blefgen stated unequivocally (Alberta 1941):

> "......the fire protection organization in the Northern Alberta Fire Ranging District is entirely inadequate as to personnel, methods of transportation, communication and equipment available. Year after year it has been pointed out that each man in this vast northern area is required to supervise a larger district then it is humanly possible to control in periods of average fire hazard and, during a period of excessive fire hazard, the task becomes a hopeless one."

In 1939 the Youth Forestry Training Project was replaced by the National Forestry Programme, under which it was possible for the Alberta Forest Service to take 130 young men into camps as trainee assistants to the rangers in various parts of the province.

Except for the main camp in Cypress Hills where there were 30 trainees, the remainder were spread throughout the other forested areas in 10-man units. A combination of work and training was provided, the result of which was that "many secured employment which would otherwise have been impossible, due to lack of training".

Two important developments took place in 1941 (Alberta 1943). The first represented a stiffening of the controls over homesteading to try to prevent indiscriminate settlement on land in areas where there were good timber stands. In addition, the areas applied for had to be inspected before an agricultural or cultivation lease was issued, to try to eliminate the establishment of a great number of settlements in outlying districts where only a meagre existence was possible. Blefgen referred to the past practice of individual homesteaders "locating in a certain area, and in order to obtain neighbours, a school and other community life deliberately set fires in order to clear additional land so that more settlers would come in". He expressed the hope that that practice would now be at an end.

The other development was passing of a new Prairie and Forest Fire Act, assented to April 8, 1941, which he felt had already had a retarding effect on man-caused fires.

An interesting cause of forest fires was postulated in 1942 (Alberta 1944).

> "A great number of aircraft flying in the northern part of the province was, perhaps, the cause of at least some of the fires fought in the outlying districts. Of nine fires that occurred in the Athabaska Valley, north and west of Whitecourt, seven were directly on the beam used between Edmonton and Fort St. John, British Columbia, and two of these were only a short distance on either side. Whilst being unable to definitely state that the fires referred to were caused by lighted cigars or cigarette butts being thrown from the planes, a thorough investigation into all other possible causes was made and the conclusion was therefore arrived that these fires were caused in this manner. It is definitely known that a large percentage of lighted cigars or cigarette butts dropped from as high as 6,000 feet are capable of starting fires ......"

Another wartime concern was the threat of Japanese airborne incendiary devices. Blefgen passed on a warning in 1942 about possible "calling cards" or "inflammable leaflets" which might be dropped from high-flying planes. Although that particular action was never launched, the hydrogen balloons launched in 1944 against North America did create some concerns. Frank Chiovelli (1984) had done an extensive review of this action and kindly provided copies of references as well as his own material. The Balloon Bomb attack was launched Nov. 3, 1944 and ended early in April 1945. A total of approximately 9,300 were released, some of which landed from Mexico to Alaska. About 102 were known to have landed or been sighted in Canada, although a RCAF investigator believed the figure must have been close to 400. The Alberta discoveries were largely in the southeastern settled portion, but one was found near the Hay-Zama Lakes, and a couple in the Fort Chipewyan area. Undoubtedly many more landed undiscovered in the forested areas. The North American defence strategy was a tight voluntary censorship on all sightings. The result was that the Japanese fortunately discontinued the action before the spring fire season of 1945 because they felt it was ineffective. Only a few isolated grass fires were started, and no reported forest fires.

John Harvie (Alberta 1945), deputy minister, announced the transfer of game and trapline administration back to the Department of Lands and Mines which made it possible to retain the services of a number of rangers on a yearly basis. He indicated that the amalgamation of forest and game responsibilities for ranger personnel had worked very satisfactorily and hoped that the policy would continue. He also announced that ranger schools, which as an experiment had been held in the spring of 1943, proved so successful that it was decided to continue them annually. Two schools, each lasting for three days, were held - one in Westlock for the NAFD rangers and one in Calgary for staff of the forest reserve. The "schools" were more in the nature of meetings, but provided an opportunity to discuss and pass on new technical information.

The year 1945 marked the 15th anniversary of the transfer of resources. John Harvie (Alberta 1946) noted that more adequate protection against fire was needed if the province was to protect its forests, which had demonstrated their value both in the production of lumber and other products, and as regulators of streamflow. He hoped that they would be able to provide more substantial appropriations in the postwar years for that purpose. He also announced that arrangements had been made with the Entomological Branch of the federal Department of Agriculture for conducting a survey of forest insects in the province, extending the nature of forest protection concerns.

Blefgen in his report as director of forestry (Alberta 1946) referred to the 15th anniversary and presented a summary of the work done since the transfer. After a cursory reference to the charts and tables in the report he commented:

> "In spite of the growth and the additional duties thrust upon this division, the increase in staff has been very small, which has meant that some activities of our work have been more or less neglected."

For the first time he reported progress in forest protection through the use of mechanical equipment such as bulldozers, tractors and plows. Especially in light of manpower shortages, he felt that without this equipment the situation would have been nearly hopeless. He presented a review of fire losses by cause for the 15 years since the inception of the department. The major three causes were campers, accounting for up to 53 percent of the loss in 1932, settlers, with up to 23 percent in 1941, and incendiary, with up to 23 percent in 1935. The highest figure for lightning was 14 percent, but a substantial proportion of the 24 percent listed as "unknown" were probably caused by lightning also.

Blefgen was also pleased to report (Alberta 1946) that their requests for closer supervision of the army and air force personnel travelling by airplane had met with a great deal of success as the fires that could be attributed to the throwing or dropping of cigar and cigarette butts from airplanes had decreased greatly.

The report of a sub-committee of the Alberta Post War Reconstruction Committee appreciated the vital need for preserving forest areas and watersheds. Harvie, the deputy minister of Land and Mines, in his 1946 report (Alberta 1947) stated that it then appeared to be the opportune time to implement some of the main findings and recommendations of the sub-committee "particularly in regard to:

a. making a physical inventory of the forest resources of the Province;
b. expansion of fire prevention services;
c. instituting a long-range programme of reforestation of cut over and burned over lands and afforestation of marginal or sub-marginal lands;
d. inauguration of a training programme for men already in the forestry service and those wishing to join it which would give courses in timber cruising, insect and disease control, reforestation, wild life, forest protection, etc.;
e. establishment of additional tree nurseries in different parts of the Province to enable a study to be made of the species most suitable for planting in the area to be supplied both from the commercial point of view, as well as providing forest cover and trees for farming planting."

The customary plea for additional support was again presented by Blefgen in 1946 (Alberta 1947), as it had been on numerous occasions since the province assumed the administration of the natural resources. However, he commented:

> ".....during the depression years we were definitely informed that no money could be made available and during the war years the necessary labour could not be secured."

He added that provision for the necessary funds for the very important work should be made now that the war was over. Urgent needs, in addition to providing access, were extension of the lookout coverage in the NAFD and building up supplies of equipment. A short course to train returning veterans for ranger work was run by Jack Bell on the Bow River Forest, a precursor to the technician training which later evolved to two-year programs.

He referred to continuing work of consolidating and attempting to forecast fire hazard by standard methods developed by his branch and by other methods such as those in use in the Dominion service. Although research in this areas had conducted by the Dominion Forestry Branch, there was a feeling that various methods ought to be tested. Blefgen also noted that Osborne fire finders, commercially made precision alidodes, were now standard equipment for lookout towers, and that considerable pioneering had been done in the aerial deliveries of supplies to fire crews by parachutes.

The report of the chief timber inspector for the Northern Alberta Forest District, F. W. Neilson, (Alberta 1947) described the continuing problem of fire in connection with settlement.

> "In a good many cases fires are set some distance from the land to be cleared; usually at a point where there is no person living. The purpose is, of course, to avoid responsibility. With a favorable wind and conditions right, there is usually little doubt that the fire will sweep over where it is wanted. This in turn leads to backfiring by other settlers for self-protection. There is also a natural urge on the part of the new settlers who have clearing to do to burn when conditions are right, and the greater proportion of lands which have been cleared in Central and Northern Alberta have been cleared by this method. Old ground fires, too, which have been smouldering in peat lands, flare up when the hazard is high and when the grass is dry, start running. When such conditions occur the fire ranger could not begin to keep up with all these fires, even if he had more legs than a centipede."

Neilson also noted the importance of being able to hire heavy equipment such as bulldozers for fire fighting purposes. With the increasing reluctance of settlers to fight fire at the rate of 15 cents per hour, they would indeed have been "in a sorry plight" during the past season without the use of power equipment. He mentioned also that at the second annual ranger conference one of the most important subjects discussed was the use of power equipment in fire fighting.

The year 1947-48 was significant in many respects. The highlights are described in the annual report of the Department of Lands and Mines for that year (Alberta 1949).

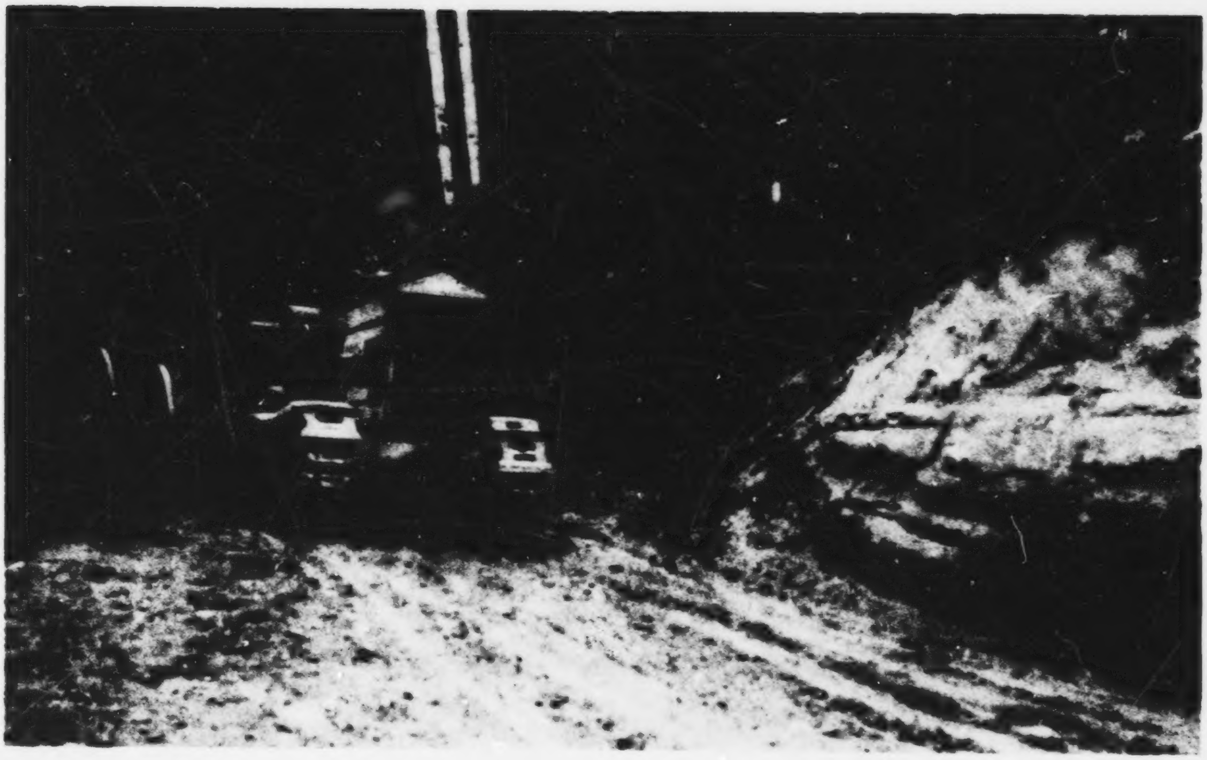


Figure 62. The availability of bulldozers helped to solve some of the problems of manpower shortages. Grading outfit on the Red Deer road. Photo by Jack Bell. (Alberta ENR)

Figure 63. The Johnson H.O.K. fire pump was judged the best pump in the last 1930s. Demonstration for John Harvie, deputy minister of Lands and Mines, Jim Hutchinson, assistant director of forestry, R.G. Reid, minister of Lands and Mines, and Ted Blefgen, director of forestry. (Alberta ENR)

> "The most important event as far as the Forest Service was concerned..... was the signing and ratification of an agreement with the Dominion Government for the setting up of the Eastern Rockies Forest Conservation Board for the administration of the Crowsnest, Bow River and Clearwater Forests, that portion of the east slope which contains the headwaters of the North and South Saskatchewan Rivers. The east slope is an area of inter-provincial interest as these rivers, whose source is in the east slope, flow through the provinces of Saskatchewan and Manitoba and are of vital importance to these other provinces as well as to the province of Alberta."

The Eastern Rockies Forest Conservation Board consisted of three members, the Chairman, Maj. General Howard Kennedy, one member appointed by the Dominion government, and the third member appointed by Alberta. The board was to direct the general policy. The agreement provided for the sharing of administration costs, with the provincial government contributing approximately $125,000 and the Dominion government approximately $175,000 per year. In addition, capital expenditures of $6.3 million from the Dominion government were authorized during the first six years of the agreement. That capital sum was intended for expansion of the fire prevention facilities through building of roads, trails, telephone lines, purchase of equipment and other related items. It was also intended to support studies to determine the best methods of forest administration, best methods for reforestation of areas which had become denuded through fires and other causes, and to do a forest inventory.

The director of forestry, T.F. Blefgen, suggested that the agreement may have led people to believe that the Alberta Forest Service was not receiving sufficient funds to handle the forest reserves as well as the Dominon may have done before the 1930 transfer. He expressed concern, too, that it may also have given the impression that there were large losses by fire while the reserves were under the sole administration of the province. He devoted two lengthy paragraphs, perhaps defensively, to indicate that there was no substance to those beliefs. Fires had certainly been a problem under both administrations, but his virtually-annual statements about inadequacy of financial support weaken his arguments about funding.

The second major event was the passing of an order-in-council on Jan. 9, 1948, which placed a reservation on and withdrew from settlement all lands of the forest reserves, the Northern Alberta Forest District, and other timber areas comprising an area approximately two-thirds of the province, for the production of timber. This area, soon to be known as the "Green Zone", was intended to rationalize a more orderly pattern of settlement and to make it possible for the Forest Service to concentrate on fire protection and timber administration in that area. Two factors were considered in setting up the boundaries - the timber stands on the area reserved, and the value of the soil as determined by soil surveys. Any areas which contained soil known to be suitable for agricultural purposes were left available for homestead leases. Many subsequent deletions to the Green Zone were to be made by orders-in-council, but these were generally on the basis of objective assessment of individual parcels of land.

A third event was the forced retirement through ill health of Blefgen, the original director of forestry for Alberta. The timing was unfortunate since events of that year appeared to have marked a major turning point in government support to the Forest Service. However, he did live for many years and was able to appreciate the advances and improvements which later came about.

The new director of forestry was Eric S. Huestis. A native Albertan, Huestis studied forestry at the University of British Columbia, started in 1923 with the Dominion Forestry Branch on the Lesser Slave Lake Forest Reserve in Alberta as a summer student, transferring later to the provincial Forest Service with the 1930 Transfer of Resources. During his career he worked in most of the provincial forests including the Clearwater and Cypress Hills. He became assistant superintendent of the Crowsnest Forest and superintendent of the Brazeau-Athabaska Forest before moving to Edmonton as assistant director of forestry in 1940. When the Game Branch was transferred to the Department of Lands and Mines in 1941, Huestis received the additional responsibilities of fish and game commissioner (Huth 1980). His knowledgeable background along with his determination and firm resolve set the stage for major developments within the Forest Service in future years.

The annual report for 1947-48 (Alberta 1949) also included a review of the Northern Alberta Forest District by the chief timber inspector, J.L. Janssen. He mentioned that the field staff then also included one timber auditor-inspector, two timber inspectors, three assistant timber inspectors, 40 forest rangers and five assistant rangers - all of whom were by now full-time employees. His review also indicated that construction projects were underway again including buildings for ranger houses, tool caches, cabins and barns, construction of roads and trails, telephone lines, fences and lookout towers.

There were 13 towers in the NAFD system at that time, nine of which were radio-equipped, the others with telephone. Fire fighting wages were raised to 35 cents per hour.

Janssen mentioned that the Canadian Forestry Association had again toured the forested areas, showing films of forest fires and conservation matters. This was the first mention of the CFA in annual reports since the Dominion references in the early 1900s. In the meantime, the Canadian Forestry Association had been active in promoting the cause of forest conservation and fire prevention, and had taken over the "Forest Conservation Week" annual spring program. Janssen paid tribute to the CFA and stated that more public education efforts, such as the recent tour, were urgently required.

The following year (Alberta 1950) Huestis mentioned the Canadian Forestry Association twice, once with respect to a talk by Robson Black, the CFA general manager, about public education in forestry in Sweden, and the need for similar programs in Canada. The second reference was a tribute to the CFA for their "very fine" publicity campaign on behalf of forest protection, including their tree planting car which had travelled through Alberta on many occasions, and their lecture tours. He mentioned two such tours which were conducted during 1948, one in southern Alberta and the foothills, and the other in the north. Arrangements were made by Alberta ranger staff, and talks and films were presented by representatives of the CFA. These proved to be popular and have been sustained since.

The problem of training for ranger staff was mentioned again, and the ranger meetings or, as they were called by the Forest Service, "ranger schools" were continued. The reason for the annual meetings was to keep all staff informed of latest developments, to learn about field problems, and to pass on the latest in technical information. Concerns were expressed that salaries being offered to ranger staff were too low in comparison with salaries for people with similar qualifications outside, and especially in the developing oil and gas industries.

In that same year the minister of Lands and Mines decided that an outside expert in forestry should be employed as a one-man commissoner to investigate forest administration in Alberta and to make recommendations. Wallace A. Delahey of Toronto was selected and his studies continued through 1950.

The rate of timber harvesting in Alberta had increased substantially under the stimulus of wartime demands and the sustained economic activity of the years that followed. The rate of cutting had been a concern to Blefgen since no forest inventory was available to indicate what the longer-term supply actually was. He recommended that a forest inventory be carried out at an early date, and warned that action would be taken if it was found that annual cuttings and losses by fire exceeded the increment. Huestis (Alberta 1949) elaborated on this concern. He noted that in 1931 the annual lumber cut was 51 million board feet. This increased steadily until 1940 when it rose to 186 million feet. In 1948 it had more than doubled to 390 million, and he stated that it was "quite evident that we are now over-cutting". At the same time he announced that the Forest Service was being approached by pulp and paper industries to use additional volumes of timber. He expressed concern about the apparent waste in logging and milling operations, as well as on the need for an inventory. He was able to announce two years later (Alberta 1951) that on Nov. 2, 1949, an agreement was entered into with the Photographic Survey Corporation of Toronto to provide aerial photographs of the entire province and to begin a forest inventory. This undertaking was supported by a cost-sharing agreement made possible under the Canada Forestry Act of 1948. The results of these activities served to further highlight the value of the timber resource, and led to changes in fire policy. In a retrospective view Huestis (1983) reflected that although the Forest Service had been pressing for this work, the Mines and Mineral Division made it possible. They needed maps of the whole province for their developing petroleum activities, and they had access to government support for funds to make it possible.

7.2 Postwar Development 1948-1958

With the increasing economic activity relating to development of natural resources, demands upon the Department of Lands and Mines grew sustantially. As a result, the old department was divided into two new ones - Mines and Minerals, and Lands and Forests. This was done effective April 1, 1949 with N.E. Tanner continuing as minister of both departments, and John Harvie as deputy minister of Lands and Forests (Alberta 1951). A new Forests Act was passed in March 1949, but its emphasis was on timber management.

The 1949 fire season was "one of the worst fire seasons ever reported in the province" (Alberta 1951). Although only 323 fires were reported, they burned over 1.3 million acres. Residents were identifed as the major factor, causing almost 24 percent of the fires but responsible for 42 percent of the area burned. Huestis concluded his report with an appeal to residents in or near forested areas who had been careless with fire in the past to be more careful in the future. Jannsen, the chief timber inspector, said the fire season was extreme throughout the spring over all of the NAFD. It was aggravated by the desire of farmers to take advantage of the very favorable burning conditions with the result that a great many of their fires went out of control immediately after being set. Their neighbors then set more fires on the pretext of back-firing to protect their buildings.

> "Forest officers were hampered in their attempt to control the situation by the fact that the old Act for the Prevention of Prairie and Forest Fires had been abolished, and the new Forests Act did not contain some of the more vital clauses of the old Act."

Problems in that respect were reflected in the record of convictions, which amounted to only 56 out of 189 prosecutions. On a more encouraging note, authority was received that spring for the appointment of six additional assistant rangers and four additional assistant inspectors in the NAFD. Three other significant events took place that year (Alberta 1951). The first established a greater visual presence:

> "For the first time in the history of this province, our forest rangers are now outfitted with uniforms. These are smartly styled in forest green color with red shoulder patches."

Training for ranger staff took an important step forward in March 1950 when a "very successful" forest conservation and wildlife course was held at the Banff School of Fine Arts. The course was organized jointly by the Department of Extension of the University of Alberta in cooperation with the two agencies whose staff would be attending - the Dominion Parks Department and the Department of Lands and Forests. The university took charge of the program, and lecturers were drawn from all three participating organizations. Fifteen Forest Service rangers attended the five-week course. This represented the first formal classroom-oriented training, and marked an important interim step between the earlier Youth Forestry Training Program and the short course organized by Jack Bell on the Bow River forest in 1946 for returning veterans, and the training programs which evolved.

The third event was increasing the forestry staff through employment of eight graduate foresters. In addition, four foresters were employed and loaned to the Photographic Survey Corporation to work on the forest inventory. These foresters were all recruited from the class of 1949 at the University of British Columbia, many of whom were to rise to positions of prominence in western Canada. R.G. Steele was to become successively director of forestry and deputy minister, and S.R. Hughes later became head of forest protection for Alberta.

A piece of "housekeeping" legislation was announced in the report of V. A. Wood, director of lands (Alberta 1951). A new Forest Reserves Act established during the 1950 session of the legislature applied only to lands that came within the scope of agreement between Canada and Alberta for management of the Rocky Mountains Forest Reserve. All other lands that were formerly within forest reserves had lost that status and were administered under the Public Lands Act or the Forest Act. Among these were the Cypress Hills Forest Reserve which was to become a provincial park, and the Cooking Lake Forest Reserve which largely became a grazing reserve.

The major resident-caused fire problems in 1949 spurred an important change in handling of burning permits (Alberta 1951). For convenience before the spring of 1950 burning permits had been issued by various agencies outside of the Forest Service. It was decided for the spring season of 1950 that they would henceforth be issued only by Forest Service staff, and only after a careful inspection of the area to determine whether or not conditions were safe. The 1950 fire season was reported as severe, but only 15 percent of the fires were reported caused by residents that year. More effective enforcement may have had a bearing - 182 persons were convicted in 194 prosecutions, most of which involved carelessness in handling of fires. The policy change was preceeded by an intensive fire prevention campaign carried out using the radio, newspapers, and visits by Forest Service staff. The change in policy for issuing burning permits undoubtedly contributed to reduced incidence of resident-caused fires. Huestis (1952a) stated that, starting in 1950, burning permits issued to residents in the forested areas would only be given after proper inspection, unless they were for an area known to be safe. Previously fire permits could be issued by voluntary fire guardians.

Platt (1984) added to these comments about enforcement from his own experience. He noted that the period 1947 to 1953 also saw considerable increase in the enforcement of the timber regulations. During the war, he stated, cutting of all kinds of forest products had just about got out of hand. Markets for forest products had developed, the settlers' "hungry 30s" attitude was that the bush was theirs by right of opening up the country, and there were very few supervisory field staff. This attitude also contributed to the careless (or planned) use of fire by settlers in attempts at cheap land clearing.

The weakness of the detection system, which was still not well developed, was illustrated by the fact that only 17 percent of the fires were discovered by lookout towers.

The appointment of Reginald D. Loomis was announced that year (Alberta 1951) in connection with the ongoing forest inventory. Loomis was to have a profound influence in setting the direction for forest management policies, and also had an effect on shaping forest fire policy through his vigorously-expressed concern over fire-caused timber losses. Receipt of the Delahey report was noted that year without comment except that it was being studied by the department. No further reference to the report was ever made in annual reports. Wallace Delahey of Toronto had been hired by the minister in 1948-49 as an "outside forestry expert" to investigate the "forestry set-up in Alberta" (Alberta 1950). His recommendations were evidently not considered appropriate.

The 1950s represented a period of great change and development. Increased attention was paid to the problem of resident-caused fires and the importance of publicity. Timber harvesting activities were increasing, the forest survey was in process, the radio network was being extended and improved, and improvements, primarily fire-oriented, were being undertaken.

In the Rocky Mountains Forest Reserve the problems of fire access had been recognized and a major decision made to construct a trunk road system running north from Coleman to Nordegg along the base of the Rocky Mountains. This project was to cost two-thirds of the Eastern Rockies Forest Conservation Board (ERFCB) capital fund. Huestis, the director of forestry, did not agree with the proposal (Huth 1980) and argued instead for a system of feeder roads from the east for fire access. However, the ERFCB had the authority and chose to build the road. The road was later extended through to Hinton and Grande Prairie, the 620 miles completed in 1956. It not only provided increased access for fire control, but stimulated heavy recreational use which had a profound impact on subsequent orientation of policies for the old Rocky Mountains Forest Reserve. Recreation was to become a dominant use, with emphasis on watershed and timber becoming subordinant.

In the fall of 1951, 20 forest officers were assembled at the Kananaskis Forest Experiment Station to start a 10-week "Forestry Training School". This was the first ranger training program organized and run by the Alberta Forest Service for its own staff. Facilities were borrowed from the Dominion Forest Service. The curriculum included a wide range of forestry subjects, with primary emphasis placed on fire control instruction. Victor Heath was appointed to organize and run the first program, and instructors were drawn from government agencies and from the University of Alberta. The course became an annual event in Kananaskis until 1959 when it was moved to a new school facility at Hinton. Students were selected from among rangers who were already on staff. The intent was to take men of proven potential to help them to improve their capabilities, particularly in the management of fire and timber.

A new laboratory of forest pathology was established by the federal Department of Agriculture in 1951 to study forest diseases in Alberta, in the North West Territories and in western national parks. This laboratory was located in Calgary under the direction of Vidar J. Nordin (Alberta 1952). Although Nordin's duties did not relate directly to fire, he, too, influenced the course of fire policies through his activities in the Rocky Mountain section of the Canadian Institute of Forestry.

Administrative responsibility for provincial parks was transferred to the Department of Lands and Forests on the first day of April, 1951 (Alberta 1952). By an order-in-council in the same year the Cypress Hills provincial park was enlarged to include the area formerly included in the Cypress Hills Forest Reserve. Fire policy for that area remained one of attempted exclusion.

In spite of encouraging changes, the cost of fighting fires remained a major concern to the government. The use of bulldozers was an example of the cost controls in effect. By this time, bulldozers had been found useful in controlling fires, but they were

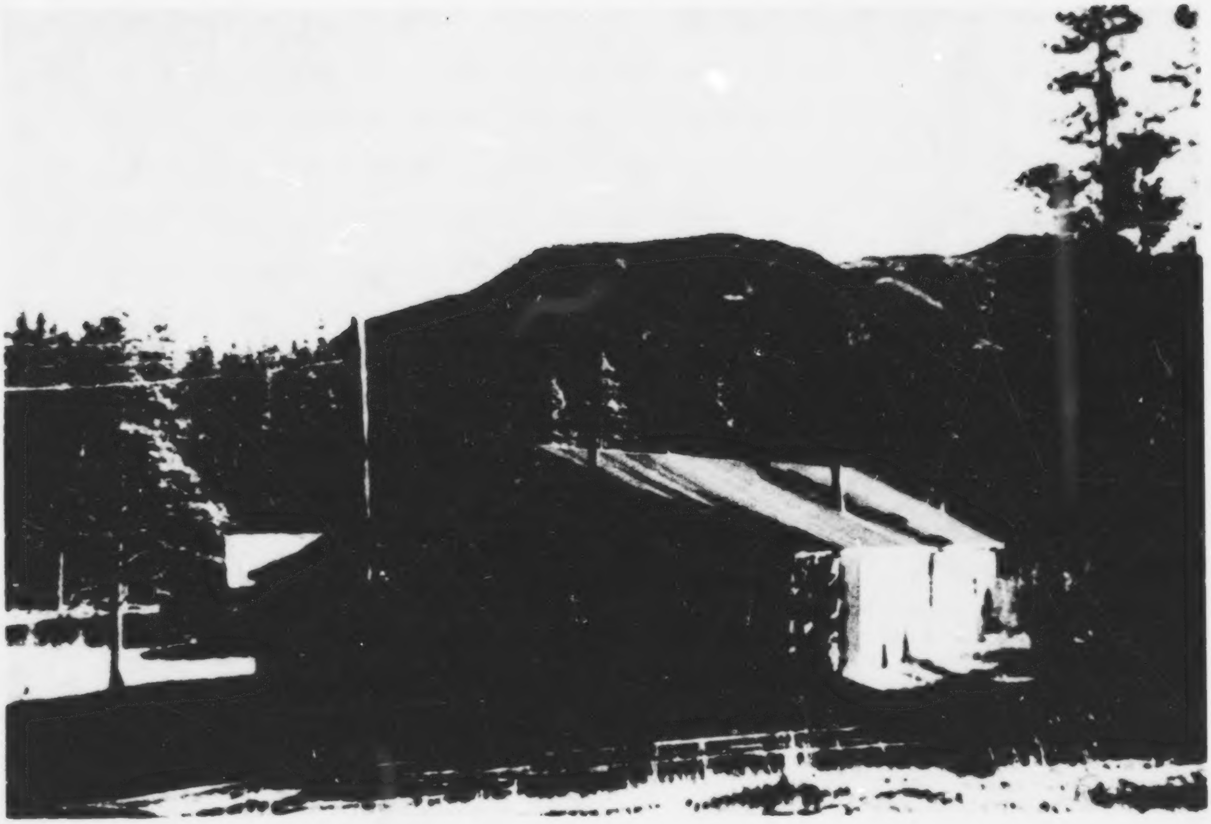


Figure 64. The original Forestry Training School at Kananaskis from 1951-1959 was the old library of the former prisoner-of-war camp. (P.J. Murphy)

expensive by comparison to hand labor. Harvie, the deputy minister, gave instructions in May 1951 (Harvie 1951) that only the director of forestry or his assistant could authorize the hire of a bulldozer. If more than one was thought necessary, ministerial approval would be needed. This order was changed the next year (Huestis 1952b) to allow a forest officer to hire the first one, with only the director's approval needed for additional ones. Huestis (1983) reiterated his concern about the effect of mechanization on human productivity, noting the necessity for manpower with handtools to put fires out. He had observed how the effort of firefighters dropped with the advent of power pumps, and again with bulldozers, in the belief that the machines would do the work instead.

Two major events over the next two years helped to precipitate the major changes in the Forest Service and levels of support for fire control which had long been advocated. During the year 1952-53 Huestis (Alberta 1953) reported that a company of efficiency experts from Stevenson-Kellogg of Vancouver had made an exhaustive study of various branches of the Department of Lands and Forests, including the Forest Service. The report included suggestions for additional staff and equipment for forest fire protection throughout the province. It was mentioned that the budgetary estimates being prepared for the following fiscal year were based on carrying out the first part of the proposed plan. The director noted that the northern part of the province had been understaffed for many years and that many of the ranger districts would have to be divided in half with two men to do the work where one man was formerly employed. The necessity of constructing many more lookouts was also mentioned

A major change in fire control policy was made during this time which should be mentioned here. This was cancellation of the "10 Mile Fire-fighting Limit" in the north on Sept. 16, 1952. Until that time no suppression action could be taken on any fire in northern Alberta unless it was within 10 miles of a navigable river, road or settlement. It has not been possible to find a copy of the original ruling, but Huestis (1972) referred to it in a talk given to new rangers:

> "The government at the time was pretty short of money, and so they refused to let us spend any money fighting fires north of Slave Lake. Twenty miles north of Slave Lake, that was the cut-off, and 20 miles north of Peace River unless you could reach it by river, and we used rivers for navigation like the Peace and the Athabasca. If it was within 10 miles of the river you were allowed to go and fight it, but we didn't have much to fight it with so nothing was done. We lost huge areas of that north country purely and simply because they wouldn't let us

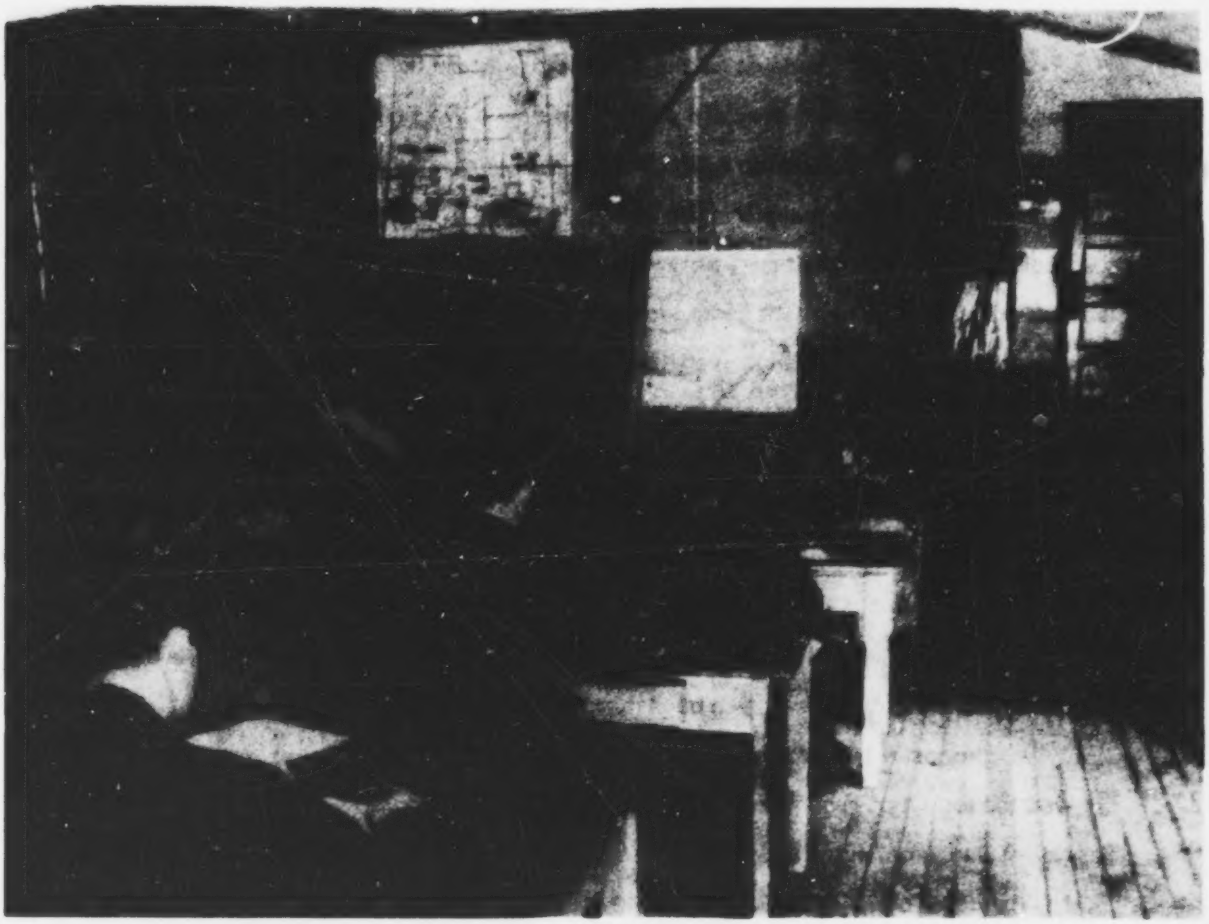


Figure 65. Eric S. Huestis, director of forestry, lecturing to first FTS class at Kananaskis in 1951. The dusty coal heaters, drafty floors and packrats contributed to a less-than-ideal teaching environment, but a great deal of effective instruction was achieved. (Alberta ENR)

touch it."

Although the antecedents of the 10-mile rule could not be found, Huestis (1983) suggested it was probably a forward step at the time it was introduced, for before then the Forest Service would take no action at all. In any event, the ruling was changed in 1952 when Jensen, the deputy minister, (1952), advised Huestis, then director of forestry, that the cabinet had ruled that the practice was to be abandoned. Henceforth, firefighting in isolated areas was to be at the discretion of the Department of Lands and Forests. The reasons for making the change were not given, but it is likely that they reflected an increasing general concern among northern residents. Probably a major contributor to the changing attitudes was the forest inventory which indicated more timber of commercial value in the north than had been believed, and that age-class data and not-satisfactorily-restocked types showed burns of far greater cumulative area than had been suspected. One 1950 burn alone straddled the Alberta-British Columbia boundary covering about 2 million acres (McKee 1965, Murphy 1978). That fire was outside the protection zone and had never even been mapped.

A composite forest-cover map produced in 1957 (Alberta 1957) very graphically showed the extent of recent burns through color codes in which red and pink were used for recent burns, old burns and brushlands.

The other major influence was a brief prepared by the Rocky Mountain Section of the Canadian Institute of Forestry. The Fire Brief, as it was called, (Rocky Mountain Section 1955), concerned the inadequate level of forest protection in Alberta. It was prompted by the loss of timber and forest production as a result of fires, highlighted by the serious years of 1949 and 1950, and by memories of earlier ones. At the same time, the level of timber harvesting in the province was increasing and pulp mill proposals indicated the greater forest industry potential which could be realized. The brief stated unequivocally that:

> "Alberta as a whole has by far the poorest record of any province in Canada in the matter of forest fire protection. This brief gives some of the reasons: not enough trained personnel, insufficient fire fighting equipment, inadequate transportation, too few access roads, and meager detection facilities. In short, not enough money has been spent to establish an acceptable forest fire protection system when judged by modern standards."

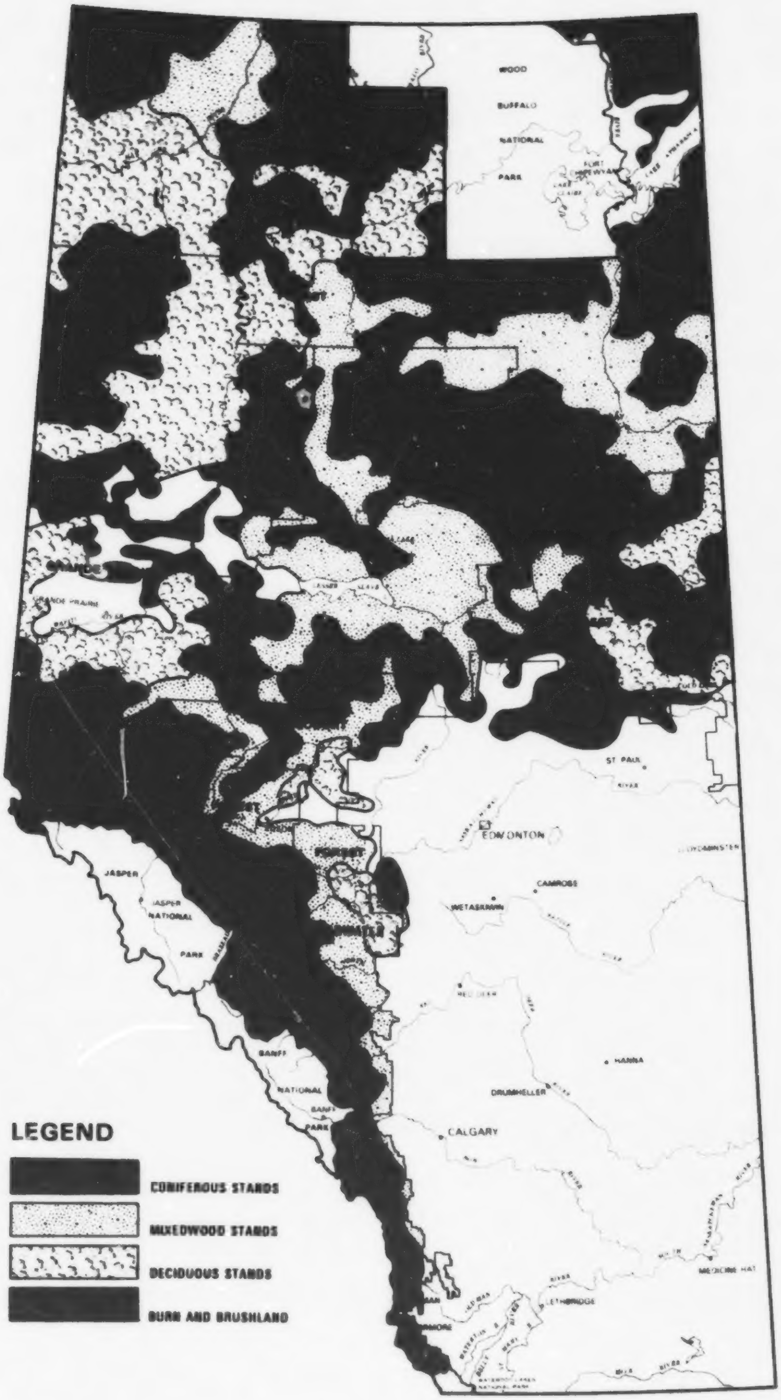

WOOD
BUFFALO
NATIONAL
PARK
FORT CHIPEWYAN
GRANDE PRAIRIE
EDMONTON
ST PAUL
LLOYDMINSTER
CAMROSE
WETASKIWIN
RED DEER
HANNA
DRUMHELLER
CALGARY
MEDICINE HAT
LETHBRIDGE
JASPER
JASPER
NATIONAL
PARK
BANFF
NATIONAL
BANFF
PARK
WATERTON LAKES NATIONAL PARK
LEGEND
CONIFEROUS STANDS
MIXEDWOOD STANDS
DECIDUOUS STANDS
BURN AND BRUSHLAND

Figure 66. Generalized illustration of the major features of the original 1957 composite forest cover map.

The many recommendations were summarized under six main headings: prevention, organization, preparedness (including use of a regionally-calculated "allowable" burn), detection, suppression and general (including increased staff). The brief was well-described by Huth (1980):

> "Probably the document most critical of the Alberta Forest Service was a brief presented by the Rocky Mountain Section of the Canadian Institute of Forestry. The brief was entitled: Forest Fire Protection in Alberta, a review and recommendations. Submitted to the AFS in 1953, it became known by all concerned as "The Fire Brief". The men who wrote it spent many eyestraining hours getting the details and statistics to support their views. As they stated later in a summary: It contained no hearsay evidence, no unsubstaniated observations, no unofficial statements, no off-the-record information, no hint of better or worse to come."
>
> "Commenting on the fire situation in Alberta in 1953, the brief said that, although Alberta's fires numbered only five percent of the total for the mainland provinces, the province suffered 29 percent of the total area burned. The writers had gone to no end of trouble to dig out the number of fires, the number of acres burned and other details.
>
> ""The reason", the brief maintained, 'is insufficient staff and insufficient funds to provide adequate fire protection and fire suppression'.
>
> "This was not news to Huestis. He could remember back when he had been assistant director, and his boss, Blefgen, had pleaded hopelessly every year for more staff. Huestis had carried on the plea when he took Blefgen's place. He welcomed the brief because it backed up some of his proposals to the minister. But during the 1930's and most of the 1940's there was no money to pay for more staff. In 1953, there was money and the Rocky Mountain Section thought a sufficient amount of it should be funnelled into protection of the forests.
>
> "The brief pointed out that the forest reserves were getting all the gravy, while the NAFD was treated like a poor and almost forgotten distant relative. As a result, the superior equipment and large staff on the reserves were able to keep their average annual burn to 300 acres per 1,000 square miles of forest, while the NAFD's record was 7,000 acres per 1,000 square miles.
>
> "There was nothing shy and backward about the Rocky Mountain Section. They recommended 22 changes in the Alberta Forest Service and its policies, some of them very large changes. Starting gently, the recommendations covered greater public education, better attention to timber operations and slash burning, stiffer penalities for those careless with fire and the issuing of travel permits in the NAFD, as had been carried out in the reserves for years.
>
> "The brief got into more meaty things. It suggested a reorganization of the Alberta Forest Service, including more autonomy in the field and only one person responsible to the director for fire suppression in the province. Other recommendations included better training for rangers, more lookouts, air patrols and airlifts to fires, standby fire fighters, and expenditures on forest protection to be increased from 60 to 85 percent of forest revenue.

> "When the section finished the brief, it printed it in both full and summarized forms. Then it mailed the summary to 13 different sources, including all the Alberta MLA's, the news media, the Alberta Chamber of Commerce, and the National Library. They sent the full brief to 23 outlets. These included the Alberta Minister of Lands and Forests, most Canadian forestry schools, the Alberta Fish and Game Association, and the Canadian Forestry Association."

In the meantime, Huestis and his staff had been working on changes which anticipated some of the recommendations. Ivan Casey, minister of Lands and Forests, replied to the Rocky Mountain Section on July 29, 1953 (Rocky Mountain Section 1955). He outlined a number of changes that had been approved and were in the process of being implemented, while others were approved in principle only. He explained that the Edmonton head office had been reorganized into four branches - Forest Management, Forest Protection, Forest Surveys, and Forest Radio. Each of the branches had a superintendent and an assistant with the necessary staff, the superintendents being responsible to the director of forestry.

The Northern Alberta Forest District had been reorganized into six Forest Divisions, each with a forest superintendent and assistant, along with a clerk, stenographer and radio operator. Those divisions had been approved and the new positions were in the process of being filled. He also mentioned that a plan of essential fire fighting equipment had been made and that a basic tool cache would be located in every ranger district. Additional supplies were to be stored at the forest division headquarters. A plan of lookout towers had been made which showed the additional towers required to give adequate coverage, and he noted that seven towers were being built that year.

The summary of recommendations from the brief and the text of the response from Ivan Casey are included in the Appendix, for they outline the concerns and government intent. The Fire Brief was later printed in its entirety for public distribution, (Rocky Mountain Section 1953), including the correspondence with Ivan Casey was included. The preamble concluded by warning:

> "We believe that it is the duty of the citizens of Alberta to make sure that the government of the province is not hampered in the execution of its plans for improved forest protection through public apathy. We warn against that false sense of economy which might induce the taxpayer to withhold the funds so urgently needed to stave off a continuation of the terrible economic loss we have suffered through forest fires."

The increased Alberta government support for fire control, as well as Forest Service operations in general, was a result of several events. The repeated pleas of senior forest service staff would certainly have helped to create a gradual awareness among legislators of the inadequacies. The extensive burns of 1919 and 1950 with the attendent newspaper coverage must have reinforced this message. The forest inventory in process and enquiries from major investors helped to demonstrate both the potential for timber production and for imminent capital-intensive forest industry developments. Probably the major enabling event, as Huestis (1983) stated, was that increasing revenues to the province generated by the developing petroleum and natural gas industry made it possible for the province to afford to do these things.

These events set the stage for a major buildup in fire control capability within the Forest Service. In 1954 (Alberta 1954) J.L. Janssen retired as head of forest protection, with T.R. Hammer appointed to fill the position. Hammer was a longtime member of the Forest Service field staff. He brought with him considerable experience and a pragmatic, determined approach to improving the situation. Not mentioned in the report was the promotion of C.F. (Frank) Platt as assistant superintendent of forest protection. Platt was also a long-time member of the field staff. He received a diploma in forestry through correspondence from the Canadian Institute of Science and Technology in Toronto, and developed a keen interest in problems of fire control. Platt generated a host of innovative ideas, and was keenly interested in the application of new technology - both with the technology itself and the need to adapt techniques to Alberta conditions. Platt and Hammer complemented each other and together played a critical role in guiding developments.

Norman A. Willmore was appointed minister of Lands and Forests in 1955 (Alberta 1955). Perhaps reflecting a defensiveness on the part of the government toward criticism in the Fire Brief, the deputy minster, H.G. Jensen, commented in the annual report "Fire protection equipment has again been increased and is now considered adequate for our present needs". Reference was also made to completion of the capital development period of the forest reserve agreement. He noted that this program of the Eastern Rockies Forest Conservation Board had been completed with the building of roads, lookout towers, ranger houses, etc., with the fire fighting equipment brought up to full strength and mechanized.

Norman Willmore was a merchant from Edson, representing the Jasper-Edson riding. He was an ardent stream fisherman and had a keen interest in the forests of his

Figure 67. Norman A. Willmore, minister of Lands and Forests 1955-1963, strongly supported improvement of fire control capability as well as a stronger general forest management program. (Provincial Archives of Alberta PA 1664/1)

riding. In spite of Jensen's earlier remarks in the annual report about the adequacy of fire protection equipment, Willmore was shocked by the fire problems evident during the 1956 fire season. He and Huestis found themselves very much in accord in their thinking and together helped to make possible many of the innovations and projects being proposed by Platt and supported by Hammer. In Huestis' view (1983) Willmore got more help, funds and support for the department than any other minister to that time.

One of the important early manifestations of this support was the construction of modern ranger stations in the northern forests (Platt 1984). He stated that the decision to take this "logical step forward" was made in 1954. Although ranger stations had been provided on the forest reserves for decades, rangers in the north largely worked out of the few forest headquarters or from their own homes, making it difficult to recruit new staff and place men where they were most needed. The new program changed that, provided a greater Forest Service "presence", and resulted in morale going up throughout the organization. These early ranger stations consisted of a house with a small built-in office, a small bungalow for the Assistant Ranger if there was one, and a small tool cache.

In 1955 a timber harvesting agreement was signed with North Western Pulp and Power Ltd (later St. Regis (Alberta) Ltd.) and construction of a pulp mill began at Hinton - Alberta's first (Alberta 1956). A major fire policy decision was made at that time. Under terms of the agreement the new company was given the responsibility for forest management planning and forest regeneration on its lease area. However, the province retained responsibility for forest protection. This was done to ensure proper attention to the job and to enhance overall coordination of fire control in the province. [1] The company was assessed $12.80 per square mile of its lease area, or about $25,000 per year. The province later modified its stand to encourage a more cooperative integrated approach, but still retained overall responsibility and control.

During the 1956 fire season two major fires burned within the boundaries of the new pulpmill agreement area. Although the Forest Service responded well in spirit to these fires, the firefighting operations pointed out many deficiencies in planning, status of equipment and capabilities of field staff. A stinging brief submitted by the forestry staff of North Western Pulp and Power Ltd. made clear from an important new non-government group just how seriously fire control was viewed. In spite of defensive statements from the Forest Service, the stage was set for vigorous reassessment of fire control capabilities. As a consequence, the government allocated increased financial support enabling increases in manpower and equipment, and construction of such improvements as roads, lookout towers and ranger stations.

---

[1] C.F. Platt 1955 Personal communication.

7.3 Growth and Technical Change 1958-1980

The next two decades saw steady increases in levels of support for forest protection. Although many developments and improvements were taking place within the Forest Service, the basic thrust of them all was primarily to improve ability to detect and suppress fire along with more effective fire prevention. Only the highlights of these years are reviewed.

The first Forest Service aircraft for particular use in fire control was obtained in 1957 with the purchase of a Fleet Courier fixed-wing (Alberta 1958). This was the start of a fleet which was to grow within the Forest Service until in 1975. A major government reorganization then saw the transfer of aircraft and the four pilots on Forest Service staff to a new Department of Government Services (Alberta 1976). Platt was very much involved in building the aerial fire support capability. He was influenced by his observations of other Canadian and U.S. Forest Service approaches, but developed a distinctly Alberta plan, the substance of which he presented at the third National Forest Fire Research Conference in Prince Albert (Platt 1959). It was to guide developments for the following critical years. There were also major increases in purchase of heavy equipment and vehicles in 1957, and a buildup of caches of both firefighting and camp equipment. Seasonal standby fire suppression crews, a relatively recent innovation, were also increased to 12 from the previous eight.

Action on fires outside the Alberta boundary by the province was taken in 1958 for the first time on record (Alberta 1959). Two fires in northeastern British Columbia were fought entirely by Alberta crews until extinguished, while one in Saskatchewan was given initial attack until a Saskatchewan crew took over. The action on the British Columbia fires was taken because of the danger of spread into Alberta, and the stated inability of the B.C. Forest Service to take any action in those locations.

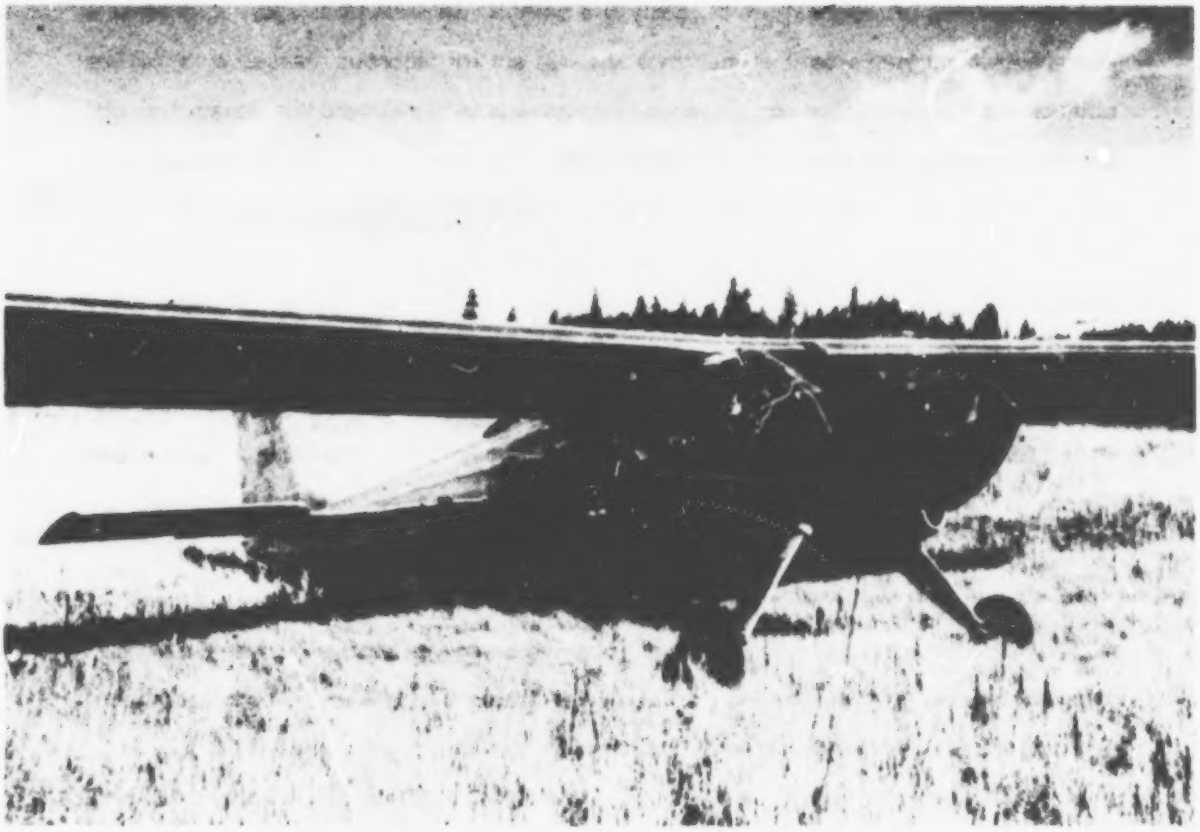


Figure 68. The Fleet Courier CF-IYZ was the start of the present aircraft fleet within the Alberta Forest Service. (P.J. Murphy)

The detection system of lookout towers was supplemented by extensive aerial patrol, a combination which has persisted to the present. A program of landing strip construction at tower sites was also begun to facilitate tower opening in the spring and quick service for radio repairs when needed. A protection planning group was developed within the Forest Protection Branch to study details of detection coverage, to plan layout of air patrol, to survey and classify roads and trails, and to develop an air operations manual.

The 1948 federal-provincial agreement covering the eastern slopes (Rocky Mountains Forest Reserve) ended in 1960 and full administrative control was returned to the Alberta Forest Service (Alberta 1960). The Eastern Rockies Forest Conservation Board continued to function in a policy-making capacity until 1973.

At this point it is appropriate to review the background to the "East Slope" agreement. An interesting review was written by Wallace R. Hanson (1973) who described the history of the ERFCB from 1947. Hansen was an early staff forester with the board and later became its chief forester. He said that the idea was conceived in the depths of the economic depression, when the then government of Alberta realized that existing fire control and management was not adequate. The experience of the severe 1936 fire season was apparently a contributing factor. Protection of the watershed was the main objective. A memorandum of agreement was signed in June 1947. Enabling legislation was passed in Ottawa in July 1947, and in Alberta in March 1948. The Eastern Rockies Forest Conservation Board was officially constituted on April 1, 1948.

Three main duties of the board were listed, all of which referred to fire: a) construction, operation and maintenance of the physical facilities of a forest protection program, b) the protection of the forest from fire, insects, and disease, and other damage; and c) the conservation, development, maintenance and management of the forests with a view to obtaining the greatest possible flow of water in the Saskatchewan River and its tributaries.

Protecting the forests from fire was given the highest priority in the spending of capital funds during the capital period of major construction 1947-1955. Hansen (1973) wrote that most problems in fire control were due to inability to transport men and equipment rapidly, and to poor communications. Among actions to remedy these

Figure 69. A Bell helicopter acquired shortly after demonstrated on important versatility in fire and forest management applications. (Alberta ENR)

problems were construction of an extensive road network, expansion of the radio network to replace the forestry telephone system, the development of a fire lookout network, the establishment of meteorological stations, and programs for mapping and inventory.

In developing the road system, Hansen stated that the relative advantages of ground and air transportation in moving men and equipment for fire fighting were carefully weighed. The forest reserve consisted of a long, narrow strip of ranges of mountains and hills with few opportunities to land fixed-wing aircraft, compounded by problems of strong gusty winds. The helicopters available at that time were not capable of operating safely at the high altitudes which prevailed on the forest reserve. The decision was made to construct a road system consisting of a trunk road from Coleman northward to Nordegg with connecting roads to link to ranger stations and other roads near the forest boundary. As noted earlier, Huestis (1983) opposed the board decision but was overruled. In Huestis' view the money would have been better spent on equipment and other facilities rather than putting such a major proportion into the trunk road system. He felt that a less-expensive network of field roads from the east through the ranger stations would have been preferable.

Hansen reviewed the fire record for the 24-year period from 1949 to 1972 when the ERFCB was disbanded. A total of 749 fires was reported, or a yearly average of 31 fires. The total area burned was 9,398 acres of the almost 6 million acre area which was less than 0.2 percent of the total area or an average annual rate of 0.007 percent[1].

Hansen wrote that the allowable burn accepted in Alberta as a whole in that period was 1 percent of the total area. This is questionable, since there was no reference in the material available from the Alberta Forest Service to an allowable burn of that magnitude. In fact, Platt (1959) presented figures to show that during the period 1949-53 inclusive the average annual rate of burn in the NAFD was 0.59 percent, and from 1954-58 it was 0.26 percent. However, the NAFD rates were certainly higher than those on the forest reserve, and greater than rates acceptable now. The higher NAFD rate reflected a combination of factors including larger areas, poorer access, less manpower and fewer resources.

---

[1] About 30% of the area was barren. Based on "burnable" area the figures are 0.23 percent total burn and 0.01 percent average annual burn over the 24-year period.

The policy with respect to recreation also reflected a concern for fire. Hansen stated:

> "Increased fire danger from campers scattered indiscriminately along the roads and elsewhere led to the building of a system of camps to concentrate camping in areas with good coverage by the fire detection system and where suppression methods could be readily applied. Shelters and masonry or metal fireplaces were built."

One of the problems in range management mentioned by Hansen related to the use of grazing as a means of reducing fire danger, as described in earlier annual reports of the Department of the Interior. Hansen stated that in certain districts the administration, with fire hazard reduction in mind, had issued permits for more cattle than the range could maintain. That policy resulted in over-grazing in some areas with depletion of the range. ERFCB grazing policies addressed that issue.

In 1958 the province notified the board that it would assume responsibility for administration of the Rocky Mountains Forest Reserve, probably reflecting a desire for greater autonomy in making management decisions. The transfer of administration was completed in 1960. Included in the transfer was responsibility for fire protection. The board continued to function as a policy and planning group until it was dispensed with in 1973 (Hansen 1973).

The Alberta detection system in 1960 comprised 17 lookouts in the forest reserve and 72 outside, for a total of 89 (Alberta 1960). The program of tower construction to extend detection into northern areas continued as a major project until 1968 when the total reached 143 (Alberta 1968).

Increased general construction and development activities related to forest protection brought about the early establishment of fledgling units within the Forest Protection Branch to deal, respectively, with research and development of specialized equipment, control of aircraft, construction of buildings, and construction of roads. A formal reorganization of the Forest Protection Branch was made in 1966 (Alberta 1967). The branch was then divided into six sections dealing with fire control, fire weather, communications, fire research, mechanical equipment development, and construction and maintenance.

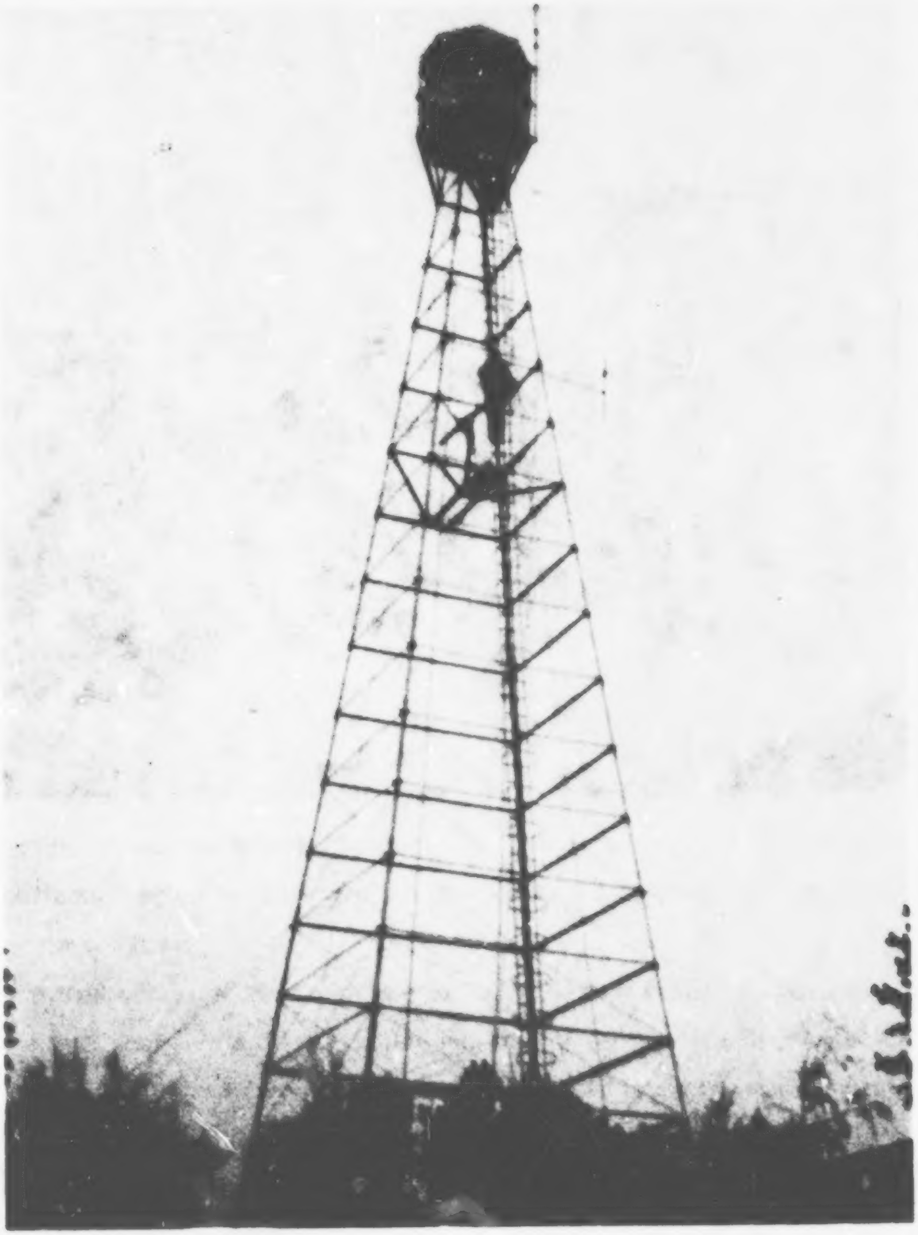


Figure 70. The fire tower network was greatly expanded during the 1960s to improve detection, enhance radio communications and provide weather data. The fibreglass cupola was developed by the AFS. (Alberta ENR)

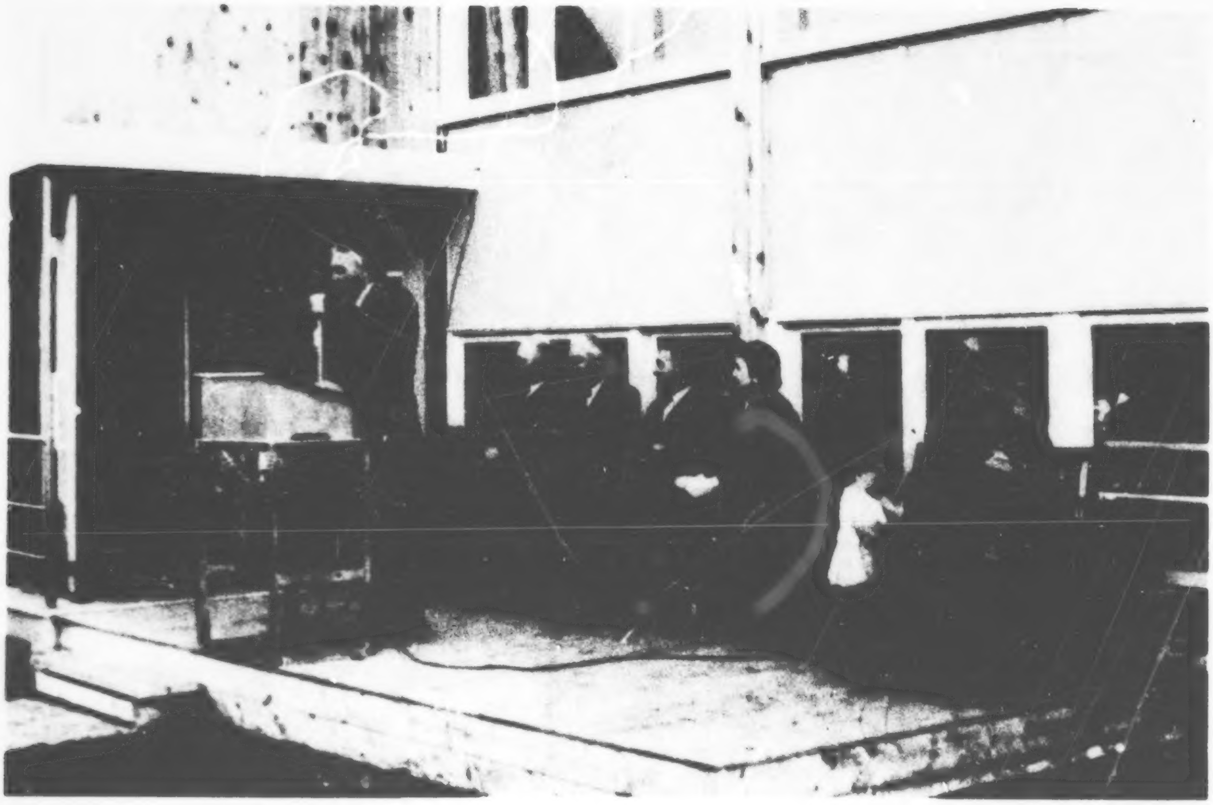


Figure 71. The new Forestry Training School at Hinton (near Forest Technology School) was officially opened in October 1960 by Hon. N.A. Willmore. Photo shows E.S. Huestis, director of forestry speaking, H.G. Jensen, deputy minister, N.A. Willmore, W.A. Switzer, mayor of Hinton, Mrs. Willmore, and the Murphy family. (FTS)

On Oct. 1, 1960, "a milestone was passed" in the opening of the department's new Forestry Training School at Hinton (Alberta 1961). A new school building provided teaching and residence facilities designed to provide a permanent centre for training of ranger staff. The 10th annual Basic Ranger Course for forest officers was held that fall, and the building was officially opened by Hon. Norman Willmore, minister of Lands and Forests. Peter J. Murphy, who assumed responsibility for training in 1956, was school director. The course, then 11 weeks in length, devoted 22 percent of the time to subjects related to fire control. The facility and permanent staff attached to it provided a base for future development of more intensive training in fire control and other forestry education.

The 1961 fire season was a severe one, with 811 outbreaks, the highest number since 1930. The area burned was held to just under 200,000 acres, and the annual report attributed this to the larger and more efficient fire fighting organization which had been built up over the past few years (Alberta 1962). The increased use of aircraft enabling swift action on fires was specifically mentioned as a major contributing factor.

In 1961 a marked increase in the number of fires caused by lightning was also noted. A review indicated that until 1954 the percentage of lightning-caused fires was not above 10 percent, then rose to 23 percent in 1959. In 1961 the percentage was 41.8. Although not stated, the apparent increase was probably related in large measure to the more effective detection capability which resulted in identification and location of lightning-caused fires.

In that same year the radio communication system was taken over by Alberta Government Telephones and incorporated into their larger network. Training of lookout men formerly done at the forest headquarters was moved to the new facilities at Hinton. The Department of Lands and Forests took over responsibility for the Junior Forest Warden movement in Alberta with responsibility also placed with the forestry school staff at Hinton. This was a youth-oriented program for boys 10 to 16 years of age, essentially the same program developed in British Columbia in 1930 as a means for increasing awareness of forest conservation and fire problems among the public in general and young people in particular. The first Alberta club was formed in Hinton in 1955 under charter from the B.C. parent group.

Figure 72. The first Junior Forest Wardens club in Alberta was formed in Hinton in 1955 by staff at Northwestern Pulp and Power Ltd. Fire training was part of the syllabus. (Alberta ENR)

In 1963 E. S. Huestis was promoted to the position of deputy minister for the Department of Lands and Forests. Robert G. Steele was appointed director of forestry in his place. Steele was one of the original group of foresters recruited in 1949. He had held a number of positions both at head office and in the field, thus bringing to the position a background of experience as well as a professional education.

A program extending fire control training to people outside the Forest Service was initiated in 1962. A course offered at Hinton was given to 26 people selected by the Forest Service as key individuals commonly recruited to assist in fire fighting (Alberta 1963). Training of Indian and Metis fire fighters showed great potential and an expanded program was developed. A program of certification of fire fighters was established in 1963 when 52 men were trained. The program grew quickly, and by 1969 a complement of 1,365 certified fire fighters was listed (Alberta 1969). In 1969 the certification scheme was revised to reflect qualifications for a greater variety of fire-oriented positions. This certification scheme was subsequently refined in the 1970s to conform to a more formal fire organization, and applied to both in-service staff and members of the public. By February 1967 Steele (1967), who was then director of forestry, directed that certified fire fighters should be the first source of manpower when recruiting fire fighters, rather than untrained volunteers or conscripted labor.

Stanley R. Hughes was named head of forest protection in 1964 upon the retirement of Ted Hammer. Hughes was also one of the original group of foresters brought in by Huestis in 1949. He had been administrator of the Eastern Rockies Forest Conservation Board until its closing, then superintendent of the Bow River Forest. Although their views often differed, he and Platt also made a balanced team, and were able to bring about many further improvements. Hughes was particularly interested in developing the concept of inter-agency exchanges of manpower and equipment. He was later able to draw on the Alberta developments and experiences to lay the groundwork for this and for cooperative fire control training through the Canadian Committee on Forest Fire Control, a group representing all fire control and fire research organizations across Canada, sponsored by the National Research Council.

In 1965 institution of a quota system of timber disposal (Alberta 1965) led to the rationalization of harvesting operations, and provided increased security of tenure in

Figure 73. In 1963 Robert G. Steele was appointed director of forestry, shown here with his two predecessors T.F. Blefgen and E.S. Huestis. (E. Nyland)

Figure 74. W.C. (Rocky) Hales, head of enforcement for Alberta Fish and Wildlife discussing fire law enforcement training at Hinton with Peter Murphy, as fire training programs were extended at the FTS. (F.T.S.)

exchange for a greater commitment to forest management by timber operators. The result was a further increase in the perceived value of the forest for timber production, and a consequent increased awareness of fire problems within management units, since fires would directly affect the available allowable annual cut.

A new conservation work and education program for young men 17 and 18 years old was set up in 1965 (Alberta 1966). The Junior Forest Ranger program was similar in nature to the old Youth Forestry Training Program, except that the major intent was to introduce forestry techniques and conservation philosophies through a summer work experience for high school students. The training included sections on forest protection, and the work in many respects was protection-related. This program has been sustained to the present and was later opened to young women as well as young men.

In order to better meet the needs for trained manpower at ranger and technician level, the Alberta Forest Service entered into a cooperative agreement with the Alberta Department of Advanced Education to share responsibility for a two-year forest technology course (Alberta 1965). Students enrolled through the Northern Alberta Institute of Technology in Edmonton where they attended the first year. They moved to the enlarged and re-named Forest Technology School at Hinton for the second year where emphasis could be given to applied field work. Graduates were qualified for employment with the forest industry as well as provincial and federal agencies. The first group of students entered N.A.I.T. during the fall of 1964, graduating in the spring of 1966. For the first time a program was available for pre-employment training of forest rangers and technicians to meet the manpower training needs which had been raised so often in earlier reports.

Eric S. Huestis retired as deputy minister of Lands and Forests on June 30, 1966. He was succeeded by Dr. V.A. Wood who had been director of lands for the department.

A fire fighting policy statement issued April 29, 1968 (Steele 1968), defined a "forest protection area" where all principles of proper fire control would apply. These principles were to include rapid detection, immediate control action, fire permit issuance, and strong law enforcement. In general, the protected area included all forest management units, the Green Zone, a buffer zone, and portions of local improvement districts which were not recommended for exclusion. In the non-protection area the Forest Service

Figure 75. C.F. (Frank) Platt encouraged considerable technical innovations while he was head of fire control operations, here demonstrating para-cargo delivery. (Alberta ENR)

agreed to provide emergency help through manpower and equipment if it was not already commited. In portions of local improvement districts not included in the protection area, the Forest Service retained the right to control smoke volume through issuing of permits in order to maintain the effectiveness of the detection system in times of high hazard. The Forest Service also assumed responsibility for forest protection on stipulated Indian reserves under a federal-provincial agreement, in certain Alberta provincial parks within the protection area, within wilderness areas and wilderness parks, and within the Primrose Air Weapons Range of the Department of National Defence at Cold Lake. Within the forest protection area, fires on private lands which were a threat to public lands were to be controlled by the Forest Service, with cost of suppression charged against the landowners only in flagrant cases of carelessness.

Public hearings for a pulp mill development in the Grande Prairie area were held in 1967 (Alberta 1968), and in 1969 (Alberta 1969). Steele reported continued improvement in forest management practices as a consequence of the agreement subsequently signed with Procter and Gamble Cellulose. Revisions to the North Western Pulp and Power agreement were also made. Steele (Alberta 1969) described many improvements in the Alberta forestry scene including substantial increases in reforestation, record production of forest products, introduction of a new long-term tenure system for deciduous timber, studies to improve management of land for uses other than timber production, and an increase in in-service training programs to advance the knowledge and capabilities of staff. The developments reflected the increasing recognition of the economic potential of the forest resources which, in turn, helped to sustain the increase in support given to the Forest Service.

The fire season of 1968 was termed the worst in Alberta's history. Almost 1 million acres of forest land were burned, with most of the damage occuring during one week of extremely unfavorable weather (Alberta 1969). Land-clearing fires became uncontrollable and swept into the forested areas in central Alberta with "unprecedented vengeance". The problem further demonstrated the necessity for greater control of farmers' burning practices and a much improved weather forecasting system.

The Forest Service head office was reorganized again in 1969 (Alberta 1970) to reflect the "increased interest in other uses of forest land and the necessity to implement greater administrative control over forestry policies and practices". The branches now comprised Administration, Forest Protection, Forest Land Use, Timber Management, Construction and Maintenance, and Training. The highlight in fire control that year was opening of the Fire Control Depot near the Municipal Airport in Edmonton. This long-sought facility brought together Protection Branch staff and enabled consolidation and better coordination of the programs which had been developed largely in support of fire control - communications, construction, vehicle maintenance, equipment development, sign-making, warehousing, unit packaging and maintenance, and air cargo delivery. The operational aspects of planning, weather services, aircraft dispatch and general fire operations were also sited there. The facility and the level of support it represented marked a major change from the deficiencies addressed in the Fire Brief some 15 years earlier, and it marked a Canadian "first" in fire control (Platt 1984).

A new Forest and Prairie Protection Act was presented to the legislature in 1971 (Alberta 1971), the changes recognizing, in part, weaknesses evident during the 1968 fire season. An important decision that year permitted charging the costs of reclamation of burned areas as a fire cost (Alberta 1971). Where a fire, or the suppression activity on it, resulted in erosion or stream siltation problems the areas affected could be treated and restored, and the costs charged to the fire. This was a reflection of a heightened environmental awareness which had developed by that time.

Recognition of the need for well-trained manpower in the forestry field led to forest ranger or technican training programs at the Forest Technology School as described earlier. A further step in the education sector was taken at the University of Alberta in 1970 when a degree program leading to the B.Sc. in forestry was approved in the re-named Faculty of Agriculture and Forestry. Although the move was not directly related to fire alone, involvement of undergraduate students, graduate students and staff in forest fire problems and research soon followed.

Policy items were under continuing discussion in 1971. S.R. Hughes, the head of forest protection, presented a draft statement of fire control policy (Hughes 1971a) which included the statement:

> "The fire control objective of the Alberta Forest Service is to reduce the occurrence of preventable fires and to detect, control and extinguish all harmful fires within the forest protection areas by means of rapid discovery

> and strong initial attack with the aim of swift control at minimum size during the first day of burning. There will be maintained an efficient flexible and progressive fire control organization which will be provided with the necessary manpower, equipment, aircraft and related facilities to accomplish the objective."

He also addressed the problem of policies with respect to rural fire control. He noted that while the AFS was responsible for the forest protection area of approximately 139,000 square miles of predominantly forest land, local governments were responsible for fire control in the counties and muncipalities adjacent to it. He observed:

> "The local governments do not have sufficient funds, trained manpower or equipment to adequately prevent and suppress fires that occur under their jurisdiction. Fires in the Counties and Municipalities each year are a serious threat to the settlement areas and to adjacent forests."

Proposals for a rural fire program had apparently been presented earlier (Hughes 1971b) with no government action having resulted. The plan was evidently an attempt to help meet the need of rural areas as well as to minimize the threat to the adjacent forest protection area. In spite of that, the Forest Service at that time was intensifying patrol and detection in the "fringe" areas to reduce the threat from settlement areas.

By this time the fire suppression organization had been extended to the north boundary of the province and a policy of control of all fires was in effect. However, the high costs of fire fighting were causing a second look to be taken at this policy as it applied to some of the northern areas. One such area, the Cameron and Caribou Hills area, was discussed by Miyagawa in 1971. He referred to the high cost of one of the 1970 fires, which was close to half a million dollars, almost half of which was for transportation by helicopters. Given the highly flammable fuel types, difficulty of access and marginal productivity, the question of whether or not a full protection effort was warranted was one of importance. The problem had previously been recognized and a proposed solution described by C.H. Geale, forest superintendent, and L.G. Huberdeau, fire control officer of the Footner Lake Forest in which the area lay. The result was a change to a limited-action policy in 1972 in this and other selected areas under which all fires would continue to be given an initial attack. Fires resisting initial attack forces were to be assessed individually to determine whether or not follow up action would be warranted.

In 1973 R.G. Steele was appointed deputy minister of Lands and Forests, and Fred W. McDougall was made director of forestry (Alberta 1974). McDougall, a forestry graduate from the University of New Brunswick, was one of the first field foresters appointed by the Forest Service and the first one in the Peace River Forest. He brought to the position a thorough knowledge of the timber management business as head of that branch and from his intervening experience with the forest industry, along with a comprehensive understanding of forest management problems and a vigorous approach to effecting improvements which he saw necessary. The following year S.R. Hughes retired and was replaced by H.M. Ryhanen, an experienced field officer who had become superintendent of the Edson Forest.

An indication of the extent to which legislative environmental controls had proceeded is reflected in a 1974 discussion of guidelines for issuing fire permits (Hughes 1974). In response to the general environmental awareness movement in the early 1970s, the Alberta Department of Environment sponsored clean-air legislation designed to restrict open burning. The original legislation was rather sweeping and evidently over-rode previous legislation, making it illegal to burn brush in land-clearing. This was later modified by defining restricted burning areas around the two major cities of Edmonton and Calgary within which no open fires for burning debris were allowed without the written approval of the Department of Environment. Outside this area debris was categorized into prohibited and burnable types. The departments of Lands and Forests, and Agriculture were then able to resume control of "burnable debris" outside of the "restricted burning areas" through use of their own permits.

A major government reorganization was effected April 2, 1975. Most of the former Department of Lands and Forests was incorporated with the Department of Mines and Minerals into a new Department of Energy and Natural Resources (Alberta 1976). Under a senior deputy minister, two deputy ministers were appointed, one each for renewable resources and energy resources. R.G. Steele was appointed deputy minister of renewable resources. The title of director of forestry was changed to assistant deputy minister in charge of the Alberta Forest Service, a position retained by McDougall. The responsibility of the department was stated to be:

> "The overall responsibilities of the Ministry are administration and management of Alberta's energy resources, mineral resources, forest resources, and public lands.

> ".....The renewable section is charged with the efficient development and planned reforestation of Alberta's forests as well as the management of public lands not dedicated to permanent forests."

The Forest Protection Branch was reorganized at the same time "to increase its capability to evaluate fire fighting operations and to emphasize fire prevention and fire hazard reduction". The reorganized branch consisted of six sections: fire control operations, aircraft administration, planning (forest fire detection and prevention), communications, fire weather, and forest fire research (fire problem analysis). The Construction and Maintenance Branch was dissolved and the elements dealing with roads and air strips were transferred to the Department of Transportation.

The first provincial fire fighters' competition was held in 1975 at Hinton. The contest was designed to focus attention on trained fire fighters and to give recognition to them. This competition was a success and has become an annual event. At this point the idea of training in fire control for improved effectiveness was firmly accepted. A systematic program based on certification and identification of needed skills formed the basis for progressive development of a group of well qualified people, both within the forest service and outside, on which to draw as needed. Many individuals contributed to this at least as early as the 1930s when Ted Blefgen trained fire fighters at Slave Lake, and 1946 when Jack Bell set up his camp on the Bow River forest for veterans. With the advent of the FTS in 1951, Jack Alexander and Dexter Champion contributed from their forest reserve background, followed in turn by S.G. (Bud) Klumph with his large-fire experience in the north, and Jack Macnab from his Slave Lake forest days. In the meantime Sam Sinclair began training fire fighters on the Slave Lake forest in 1960, then provincially, the program later taken over by Harry Edgecombe with his insightful understanding of the trainees and province-wide experience. The pace quickened after the FTS move to a permanent base at Hinton with training teams under John Benson, who drew on his fire control officer experience, along with Chuck Ratliff who took a personal interest in the fire simulator made operational in 1967, then John Morrison with his vigorous commitment and insights from the U.S. Forest Service in Montana, Pat Pattison, then Harry Edgecombe with his dedication and vision of Plan A unfolding as it should. Frank Platt and Carson McDonald with their penchant for organization and system inspired and helped to mould the system as it emerged, followed by Art Peter and Bernie Brouwer who kept things moving while adding refinements. The progression continued with Ken South and his team including Gordon Baron, and currently Dennis Quintilio with experience in both fire operations and research ushering in computer-assisted decision making and use of fire by prescription.

The first definitive statement of fire control policy was found in a report prepared for the Canadian Council of Resource and Environment Ministers in 1976 (CCREM 1976a,b). The main forestry objective in Alberta was:

> ".....to manage Alberta's forest lands to ensure a perpetual supply of benefits and products while maintaining a forest environment of high quality."

Related more specifically to protection was the objective "To protect Alberta's forests from damage and destruction by fires, insects and diseases".

In the identification of major forestry problems in Alberta the section on protection stated:

> "In spite of the fact that the highest priority has been given to the protection of Alberta's forests from fire, the Province has not attained a level of capability that is adequate to handle multiple fire situations in high to extreme hazard conditions, particularly where such conditions occur over a period exceeding four or five days.
>
> "Further improvements are needed in all areas, but particularly in terms of reducing the number of recreational fires, in controlling settlement (land clearing) fires during periods of extreme hazard, in prompt detection of lightning caused "sleeper" fires, and particularly in increasing the promptness and effectiveness of initial attack in multiple fire situations.
>
> "Alberta now has good basic fire prevention, detection and suppression programs, but incremental programs are needed in specific areas. It is hoped that a more effective publicity and patrol program will help reduce man caused fires. The Province is acquiring one thermo-vision unit to aid in the detection of "sleeper" fires, and the fire bombing fleet has been expanded....."

A more definitive statement on forest protection was presented in the review of objectives (CCREM 1976b):

> "The goal of the Forest Protection organization is to minimize the loss of forest areas to fire and to control any major insect and disease infestation that may develop. Specifically, Alberta's objective is to hold the annual burn from wildfire to one-tenth of one percent of the forest land area."

A description of means by which this objective could be achieved included publicity programs, legislation, forest management programs and expanded aircraft capability. The major impediment was again budgetary constraint. Large, remote forested areas were difficult and costly for patrolling and for effectively fighting forest fires. Increased aircraft costs were impairing the initial attack concept. Among changes needed were evaluation of the current detection system to maximize efficiency, and further improvement in technology and in staff training to enable efficient use of equipment.

The following year McDougall (Alberta 1977) reported that a major study had been completed into the use and effectiveness of air tankers in Alberta. The study identified three areas in which firebomber coverage was inadequate. He announced that planning had begun to determine the best means for providing initial attack capability on those areas.

Many new resource-based communities had become established within forested areas, creating additional problems for protection. The forest protection regulations were amended in 1977 (Alberta 1978) to give a city, town or village in a forest protection area the duty of taking fire precautions, but removing the responsibility for those precautions in areas outside its boundaries.

McDougall was appointed deputy minister of renewable resources in 1978, and was replaced by J. Allan Brennan as assistant deputy minister in charge of the Forest Service. Brennan, also a U.N.B. forestry graduate, had held an equivalent position in Newfoundland.

During these more recent developmental years, Frank A. Appleby has played a quiet, but important and influential role in improving Alberta Forest Service capability to respond to fire problems, and extend its ability to support forest management. The member of the legislative assembly (MLA) from Athabasca, he has been chairman of the Caucus Committee on Forestry and was recently named Deputy Speaker. Mr. Appleby has been able to draw on his background experience as a farmer, sawmiller, and school teacher in encouraging a conservation view among his colleagues.

Goff (1979) provided additional details of the forest protection objectives in Alberta.

"1. fire discovery size of 0.25 acres or less

"2. actioning of all fires within 1 hour of discovery

"3. control of all fires at a size of 3 acres or less, and

"4. remaining within an annual allowable burn of 0.1%"

Figure 76. Fred W. McDougall, presently deputy minister of Renewable Resources, was named director of forestry in 1973. (Alberta ENR)

Figure 77. J.A. (Al) Brennan was appointed assistant deputy minister responsible for the Alberta Forest Service in 1978. (Alberta ENR)

Goff went on to explain that while the annual allowable burn of 0.1 percent applied provincially within the forest protection area, certain high priority regions existed where no fire loss could be accepted, and protection emphasis was correspondingly increased.

Goff also referred to the provincial Forest Protection Branch's dependence for research upon the Northern Forest Research Centre of the Canadian Forestry Service. However, the Forest Service did become directly involved in many joint operational research projects. Not mentioned was formation of the Forest Development Research Trust Fund in 1974 by the Forest Service (Alberta 1975) through which the Faculty of Agriculture and Forestry at the University of Alberta became further involved in many aspects of research related to forest fire management.

7.4 Contemporary Policy to 1981

General fire fighting policy was outlined in a circular memorandum to all forestry personnel from F.W. McDougall (1977), at that time assistant deputy minister in charge of the Alberta Forest Service. He referred to the "forest protection area" as the area within the province where rapid detection, immediate control action, fire permit issuance and strong law enforcement principles are applied. The area was defined by order-in-council. In general, the forest protection area included public lands outside counties and municipalities. An attempt was made to establish the boundary on a practical fire control basis where there was insufficient fuel to sustain a major fire which could penetrate the forest protection area and be difficult to suppress.

Legislative responsibility for control and suppression of fires within counties and municipalities lay with them. However, the Forest Service was empowered to take action which it deemed necessary if the country or municipality did not, and expenses were chargeable to them.

Improvement districts, in contrast to counties and municipalities, are sparsely-populated districts which are administered more directly by the Department of Municipal Affairs. Any portions of improvement districts within the forest protection area were to be accorded the same degree and intensity of protection as the remainder of the forest protection area. Fires occuring in improvement districts (IDs) outside the forest protection area which posed a threat were to be fought at Forest Service expense. Policy encouraged the formation of "rural fire protection areas" through local advisory committees of the local improvement districts. In the IDs outside the forest protection area the Forest Service had authority to require burning permits to control smoke volume, or could declare them non-permit areas.

In wilderness areas and wilderness parks the policy was also essentially one of suppression. McDougall (1977) wrote:

> "The philosophy in establishing wilderness parks and wilderness areas is to preserve these ecologic systems with minimal disturbance by man. Some members of the public see fire as being natural to the areas and are advocating that suppression activities be curtailed in the parks. Although the parks will continue to remain part of the protection zone with the same emphasis on initial attack; the methods employed to suppress fire require some changes from our conventional approach."

The section went on to describe guidelines for minimizing impact through attention to fireline location and construction, location of fire camps, and suggestions for post-fire restoration activities.

Many industrial plants are also located within the forest protection area. Fire control officers were advised to review the situation at each plant with a view to reducing or breaking fuel continuity which could carry a crown fire close to the plant. The policy stated that plant staff were to be well drilled and able to take precautionary suppression measures in the event of fire.

Fire control policy in provincial parks remained the responsibility of the Parks Division, but was to be developed in conjunction with the Alberta Forest Service. In essence, the policy was one of suppression of all fire. The provincial park staff was to take initial action, and the Forest Service would provide backup support where necessary. The one exception was Cypress Hills Provincial Park where the park service had its own fire control organization.

Fires on private lands in the forest protection area were to be fought by the Forest Service if they posed a threat to Crown land. Suppression costs could be charged in flagrant cases of carelessness.

A number of Indian reserves within the forest protection area were covered by a federal-provincial agreement. These were to receive the same degree of protection as the forest protection area itself.

The Air Weapons Range of the Department of National Defence at Cold Lake was included within the forest protection area, and the Forest Service retained responsibility for fire control.

The policy statement also included guidelines for minimizing environmental impact of fire suppression activities, and authorized expenditures of up to $500 per fire for restoration. Proposals for restoration costs greater than this amount must be approved by the forest protection director.

More specific fire control standards were outlined in a circular from J. A. Brennan (1979), assistant deputy minister responsible for the Forest Service. Two statements in particular are worth stating here:

> "The broad objective of the Forest Protection Branch is to hold fire losses to an acceptable minimum with the least expenditure of funds necessary to provide adequate protection of the resource consistent with public interest and resource commitment."

> "The acceptable annual fire loss for the area under protection is one tenth of one percent per annum. However, it must be realized there are areas of high utilization and value where it is desirable to reduce fire losses below the general acceptable standards."

The control objective for wildfires was to remain the "10 o'clock rule", under which sufficient initial attack forces were to be marshalled to control a fire during the first burning period before 10:00 a.m. the next day. The exception was the Caribou-Cameron Fire Control Area in northern Alberta in which the control time was advanced to 7:00 a.m., in view of the longer period of daylight, and where continued or increased action was subject to assessment. Other objectives included the following:

Discovery size	1/4 acre or less
Reporting time	5 minutes or less
Control size	3 acres or less
Get-away time	15 minutes or less
Action all fires within	1 hour or less

In high priority regions staff were advised that these states of preparedness should be such that get-away and travel times were below the guidelines. Explanation was required where action objectives were not met. The circular concluded by stating:

> "We have established a rather good record but it cannot be retained without continuous evaluation of performance, stimulation to surpass standards and implement change or improvement where system deficiencies are identified."

Clifford B. Smith became head of forest protection upon the retirement of H.M. Ryhanen at the end of 1980. Smith was a forestry graduate from the University of Montana who had been superintendent of the Grande Prairie Forest. The new head office fire management team comprised Howard Gray with career experience in both Alberta and N.W.T. as head of fire control operations, and Joe Niederleitner with planning, research and operations experience as head of fire control planning.

Smith (1981) advised that those objectives still prevailed. The travel time between discovery and manning of a fire, however, had been amended from one hour or less to either one hour or one half hour depending on the hazard ratings. He had no data at that time to verify whether or not these standards and objectives were being met.

Recognizing the variability in fire seasons and relative resource values, the Forest Service described four priority zones to guide fire attack decisions at critical times.

Priority Zone 1 consisted of areas surrounding population centres. Priority Zone 2 generally comprised the south and western forested areas which represented major watershed and recreation values plus major merchantable timber-producing areas. Priority Zone 3 included most of the commercial timber-producing areas in the northern forests, along with active oil and gas fields. Priority Zone 4 represented the remaining areas, primarily in the north and east central regions representing low-value timber management units, potentially productive areas, and major grazing areas.

Although the initial attack strategy applied to all priority zones, it was to be applied essentially within the limits of resources available. In Priority Zone 4, such as Caribou-Cameron, an escaped-fire analysis would determine the followup actions if fires escaped initial attack. The priority system also made it possible to guide reduction of fire action in lower priority zones when fires occurred at the same time in higher priority areas when resources were limited.

Research in the field of forest fire management has been largely conducted by or through the Canadian Forestry Service which began its forestry research thrust during the late 1920s. Research became its major emphasis after the 1930 transfer of resources. A major fire research program is centred at the Petawawa National Forestry Institute, in

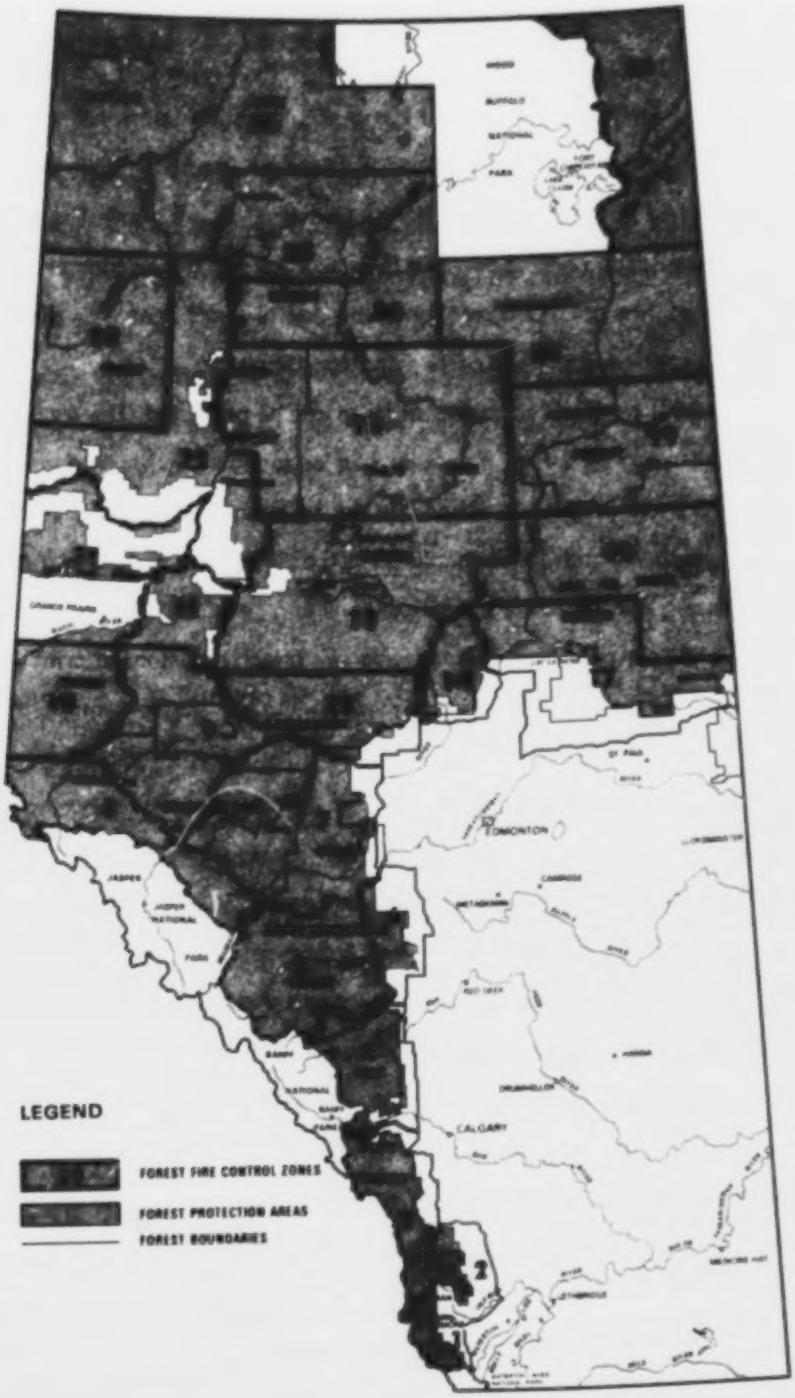

WOOD
BUFFALO
NATIONAL
PARK
EDMONTON
JASPER
JASPER
NATIONAL
PARK
BANFF
NATIONAL
PARK
CALGARY
2
1
LEGEND
FOREST FIRE CONTROL ZONES
FOREST PROTECTION AREAS
FOREST BOUNDARIES

Figure 78. Fire suppression priority zones.

Ontario, which now includes the former Forest Fire Research Institute. Regional studies are carried out at the laboratories in Edmonton as well as in Victoria and Sault Ste. Marie.

Kiil (1979) listed the primary aims of the national CFS fire research program as follows:

> "1. to develop methods for predicting occurrence of wildfires and the behavior of wild and prescribed fire
>
> "2. to improve existing methods and techniques and to develop new ones so as to enable fire management agencies to assess and optimize the effectiveness of fire suppression operations
>
> "3. to understand the natural role of fire and fire effects on the environment and to develop concepts and procedures whereby this information can be integrated into fire management and land use plans, and
>
> "4. to monitor, develop, and standardize new fire management concepts, systems, planning aids, and information sources to maximize net social and economic benefits from fire management."

In addition to the CFS research, as mentioned previously, forest fire research and education of graduate students is undertaken within the Faculty of Agriculture and Forestry at the University of Alberta. The Forest Service itself is also involved in studies of an applied nature.

An interesting review of the history of development of fire control in Alberta was presented by McDougall (1980) in a talk to the Keep-Green Luncheon at the annual meeting of the Western Forestry and Conservation Association in December 1980. He stated, in part:

> ".....The Alberta Forest Service, since its inception in 1930, has been primarily a forest fire control agency. Major improvements were made in the period 1955 to 1965, with the establishment of tower coverage over most of the province, the use of aircraft for detection and initial attack, major staff increases in the Forest Service, and the implementation of a complete staff training program with emphasis on fire control training programs. Effective fire prevention programs by the Alberta Forestry Association, together with the Forest Service, were very effective in changing public attitudes during this period.
>
> "As a result, during the decade 1960-69, annual fire losses had been brought down to 49,000 hectares per year for the decade, less than 1/10 previous historical levels."
>
> "During the seventies, further improvements were made, so that by the end of 1979, Alberta had developed a fire control organization which can be described as follows:

- a Forest Service with 655 permanent staff, and 400 of whom are located in the field and assigned to fire as required; and 32 in our Forest Protection Branch in Edmonton.
- a forest protection budget of 10 million dollars per year, exclusive of ranger staff salaries, nearly all of it for pre-organization and system operation. Direct fire costs paid by special warrant with no ceiling.
- virtually completed tower coverage, with 143 towers manned during the summer.
- fifty district and 10 forest headquarters with equipment to supply 3,000 firefighters.
- an organized system of 25 trained native firefighting crews of 25 men per crew.
- thirty initial attack crews (generally 4-5 men per crew).
- eleven aerial tankers on seasonal contract, 6 B26's; 5 Cansos.
- eight helicopters on seasonal contract, 3 204B's; 1 Aestar 350D; 4 206B. In addition, five government-owned 206B available as required.
- one government DC-3 outfitted to move the 25 man native crews around the province as required.

"This organization, during the 1970's, reduced the 1970-79 annual fire loss to 43,600 hectares per year, a small but real improvement over the previous decade. However, it should be noted that this improvement was achieved in the face of a significant increase in the number of fires, from an average of 505 per year in the 60's to 733 per year in the 70's. This increase in the number of fires is not attributable to any one cause, however, it should be noted that there is increasing risk of fire occurrence as the industrial and recreational use of Alberta's forests increases from year to year.

"In Alberta, the Forest Service is responsible for all aspects of forest fire control. The companies pay a holding and protection charge of about 15¢ per hectare per year on timber areas allocated to them. This resulted in payment of forest protection charges of about 1 million dollars by our forest industry in fiscal 1979-80. Approximately 30 percent of public forest land has been allocated to commercial forest production."

"From all of the above, you can see that we have been making good progress in controlling wildfire in Alberta, to the point where some of our citizens have been concerned over the ecological effects of removing fire from the forest, and the resulting shift in vegetation to the later successional stages."

McDougall went on to discuss the serious 1980 fire season, to which reference will be made later. The general level of improvement in results of forest protection was demonstrated by Miyagawa (1979). His figures are presented in the following table.

Decade	Average Annual No. Fires	Average Annual Burn in ha	Average Fire Size in ha	Fire Budget (Pre-suppression) At end of Decade $ million 1979 equiv.

1949-58	2200	452,254	832	9.2
1959-68	496	147,551	120	16.6
1969-78	678	65,458	39	36.9

Although the averages presented by Miyagawa suggest a trend over those three decades, the figures mask the great variability in numbers of fires and areas burned from year to year. Statistics were compiled by Stocks and Barney (1981) covering the period from 1918 to 1978. The number of fires ranged from a low of 84 in 1951 to a high of 1,758 in 1922. Areas burned ranged from a low of 2 557 ha in 1935 to a high of 400 400 ha in 1968. A copy of this list is included in the Appendix. Their summary by decades also indicated a sustained reduction in total area burned and average fire size over the last 40 years. Average number of fires per year increased by decade from 233 in the 1950s to 716 in the 1970s.

Age-class data from the forest inventory may provide an indication of the efforts of these decades of fire control action on stand-destroying fires. Data from 1968 were summarized by Hellum (1980 nd) in 30-year classes for Alberta.

Age Class	Period in Years	Percent of Area
5-35	1933-63	13.5
35-65	1903-33	35.2
65-95	1873-03	35.1
95-125	1943-73	8.1
125-155	1813-43	8.1

The average annual rate of burn of stand-destroying fires for 1933-65 was 0.45 percent. For the three decades 1903-33 the adjusted average was 1.36 percent, and for 1873-03, the corresponding rate was 2.28 percent. Assuming equivalent severity in fire seasons during these periods, it could be postulated that Dominion Forestry Branch efforts reduced the burn rate from 2.28 percent per year to 1.36 percent, and that the Alberta Forest Service efforts further reduced this to 0.45 percent. The trend of these figures is substantiated in a more detailed study by Murphy (1984) in process, based on Phase 3 inventory data.

Kiil (1979) presented a summary of Alberta fire statistics in the form of graphs showing both 10-year moving averages and individual variation.

These peaks of major fire occurrence have both created the problems and provided the stimulus for improving the capability to meet them. In 1980 weather factors combined to create another serious year. As McDougall (1980) described, during the period January to March, 1980, there was 30 percent less snow than normal in northern Alberta. March itself was warm and dry so that snow had completely disappeared from open areas by the end of the month. April continued dry, with exceptionally warm weather without the intervening relief through precipitation which normally occurs. By the second week in April the Forest Service recognized that a serious problem existed and a major effort was started to get the fire control organization ready a month ahead of normal. However, major fires "exploded" in the middle of that effort. One fire in northeastern Alberta was discovered at 7:30 a.m. on April 23. It was 100 ha in size by noon that day, 4 000 ha by noon the second day, 20 000 ha by noon on the third day, and impossible to control. Attack was hampered by lack of helicopter transport, and unavailability of air tankers. Provincial problems were aggravated by the fact that manpower was unavailable. Many of those normally recruited for seasonal help were either in the bush trapping, in other work, or still in school. Showers in late May brought some relief, but northern conditions remained serious until August, which was wet. The final result in 1980 was a total of 1,296 fires which burned 640 000 hectares, the highest area burned then on record. As McDougall put it, after only one season, "the ten year average for the '80s is already much poorer than for the previous two decades". He estimated that the loss amounted to 14 million cubic meters of merchantable conferous timber which would reduce the net available harvest for the next 80 years by 2.5 percent. Direct fire fighting costs above the regular appropriation were $35 million.

McDougall listed eight lessons, all related to fire control planning:

1. The fire control system had become too dependent on specialized groups which were not always available - such as students still in school and trappers still on their traplines.
2. The Forest Service should have acted sooner in starting an early mobilization, in spite of statistics which showed only limited fire starts in April.

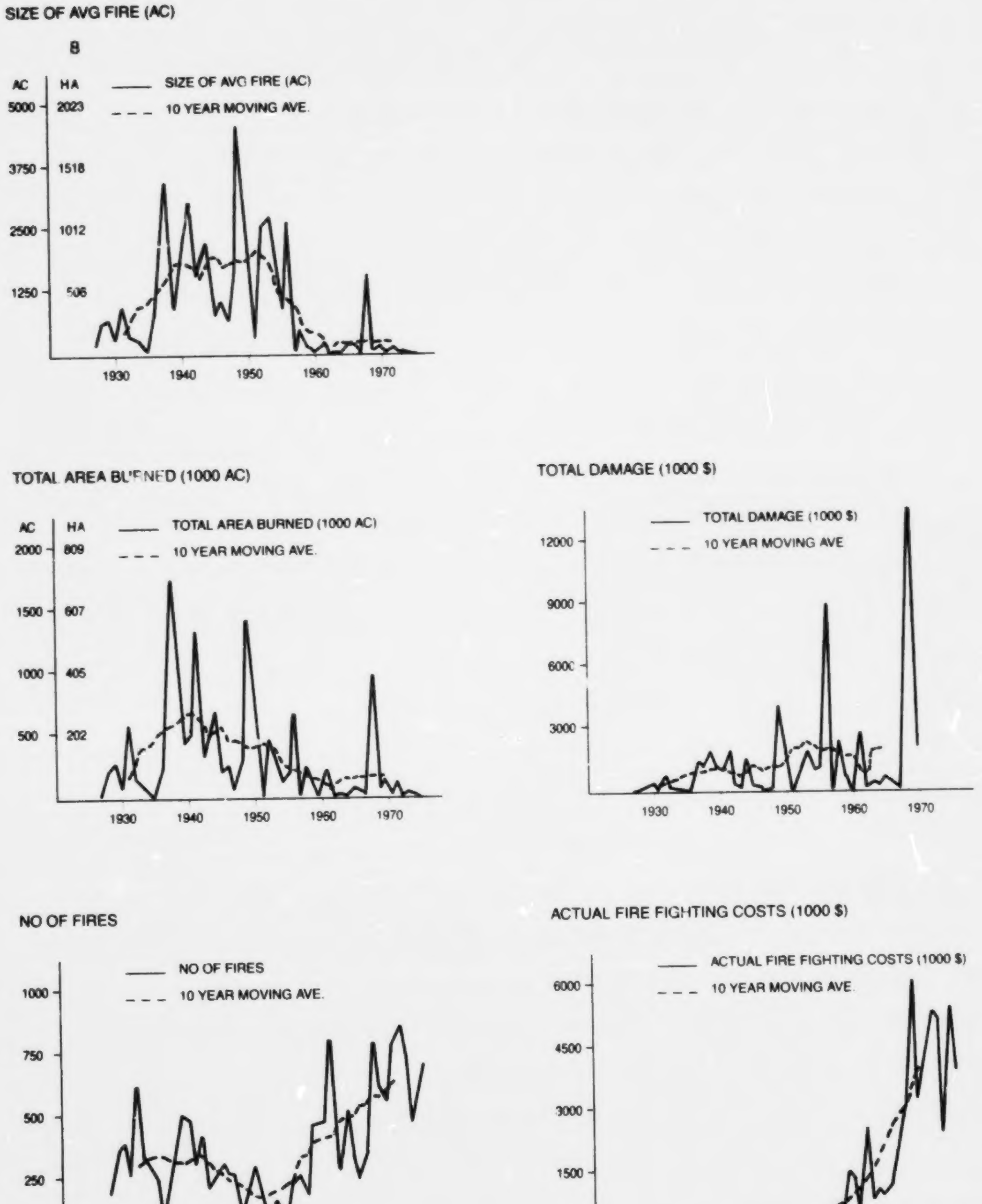


Figure 79. Fire statistics for Alberta 1927-76. (Kiil 1979)

3. If a hazard exists, fires will come, and the Forest Service should not gamble on the theory that the risk of fire starts is low at times of high to extreme hazard.
4. The resources were inadequate for the situation, even after they were up to full strength. He listed a number of additional resources requested for 1981 including five additional helicopter initial attack crews complete with helicopters, increased staff for the initial attack crews traditionally employed, and four additional air tankers.
5. Contingency plans should be developed to ensure availability of towermen, initial attack and fire fighting crews in April or at any time in the event that traditional sources were not available
6. The fire prevention program needed improvement with emphasis to be placed on reaching specialized groups. Trappers, for example, were believed to have started several bad spring fires, and military training exercises started others.
7. Forest industries were to be asked to further develop their fire fighting capabilities to be able to take over initial attack as well as provide backup support in their timber supply areas when circumstances had overtaxed the Forest Service.
8. The fire detection system was to be upgraded through the addition of electronic lightning counter-locaters and increased aerial patrol at times of high and extreme hazards.

Recognizing that in spite of best intentions, large scale wildfires would still occur and be difficult to control, plans must be made for that occurrence. Two major steps which had been taken were described - that of the Green Zone Policy established in 1948 which prevented indiscriminate development within the forest, and fire guarding and fuel management around industrial sites and installations in forests which had been in force since 1960. McDougall referred to the problem of commercial recreational facilities such as fishing lodges which required inordinate resources to protect since they were located in fire-vulnerable sites.

He concluded by outlining four major areas in which improvements were still badly needed.

1. More emphasis had to be placed on fire in land-use planning. Fire control considerations had to be incorporated to a much greater degree in plans for logging,

watersheds, recreation, and wildlife.

2. Much more emphasis on fire protection in the planning of site layout for residential and recreational developments in and near forested areas was required.
3. More emphasis on fire protection in setting specifications for buildings and utilities, particularly water supply, where buildings were being located in forested areas.
4. Much more emphasis on vegetation management to avoid extensive unbroken tracts of highly flammable forest types, and establishment of vegetational and other kinds of fire breaks in strategic locations.

Thus, policy for the control of forest and prairie fires has evolved from one of acceptance of fire as a vicissitude of life at the time of arrival of the first European through attempts at full control, to one which now tries to balance control measures with economics and environmental considerations. Still, variations in weather and the availability of fuels set the stage for recurrent fire problems which exceed control capabilities and still defy complete mastery in spite of efforts to the contrary. Further refinements in policy and control techniques are expected.

8. SUMMARY

The fundamental element which made these developments feasible over the years was money - the budgeted resource granted by governments to run the forest service and to do the fire control job. The next two graphs show the forest service and fire control budgets from 1905 to 1982 adjusted by the Consumer's Price Index (CPI) to a constant value equivalent to 1981. The patterns of these expenditures effectively summarize the government responses to fire problems over the years.

The first bar chart of total operational budgets reflects the slow build-up of the Dominion Forest Service during its infancy, the major growth appearing in 1911-12 after the Forest Reserves and Parks Act. The small fluctuations in the budgets reflect variations in fire seasons, as outlined later, but a fairly consistent level of support was evident during the 1920s. The first major change occured between the fiscal years 1931-32 and 1932-33.

During the last full year of federal administration in 1929-30, the adjusted Forest Service budget in Alberta was $2.12 million. The $ 1.78 million during the first full year of provincial administration in 1931-32 contrasted quite favorably , confirming the stated provincial determination to maintain that federal level of forest management. However, the equivalent sums for the following two years declined 46 percent to $ 1.07 and $0.95 million respectively, reflecting the severe cuts made in response to the depression. In fact, it was 16 years later in 1947-48 before the constant dollar expenditure exceeded that of 1931-32, and it was a full 20 years to 1949-50 before expenditures exceeded the previous peak of $2.12 million.

The fairly steady level of funding to 1948-49, although it shows some increase, clearly reflects Blefgen's comment (Alberta 1947) that during the Depression years there was not money available to do the work, and during the war years there was not the manpower available.

The year 1948 showed the turning point brought about by postwar reconstruction, veterans returning to settle new areas for agricultural development, the beginning of the first Alberta forest inventory, and the need to protect non-forest values. What made this increase and all subsequent budget increases possible was the over-riding impact of increased provincial revenues generated by petroleum and natural gas activity. These

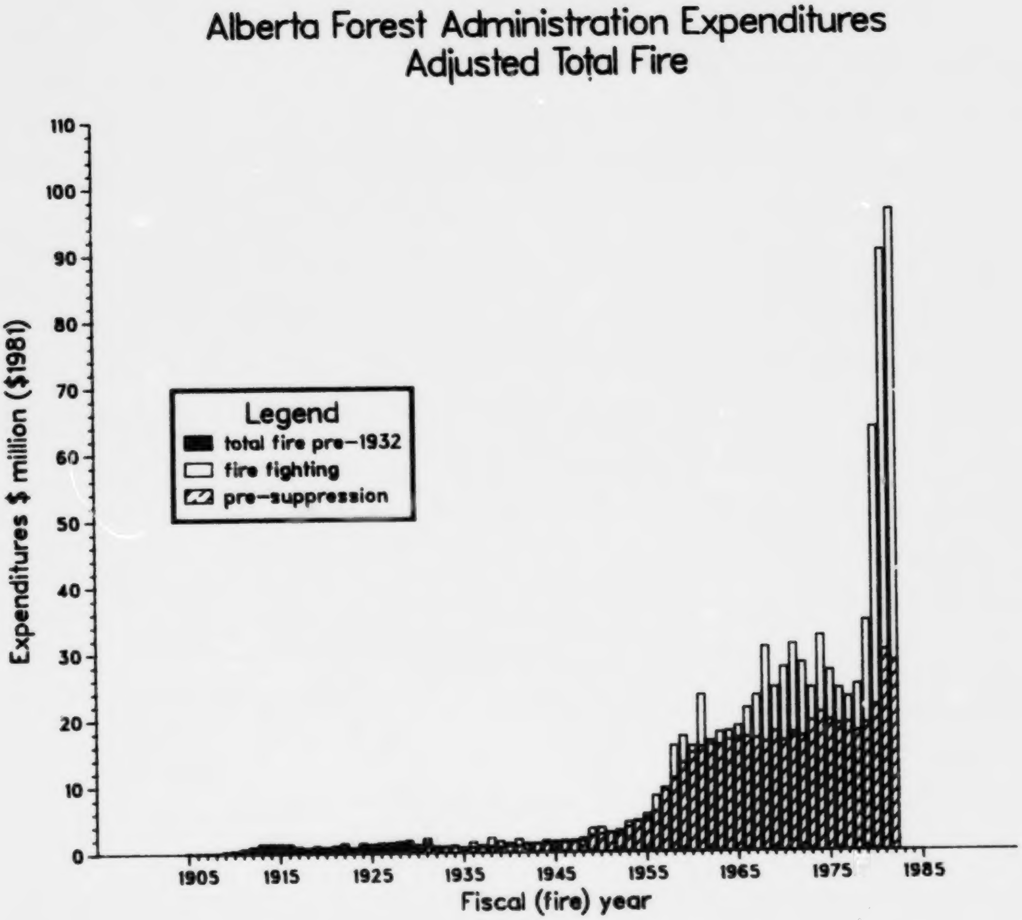


Figure 80. Constant-dollar (1981) costs of forest service expenditures not including fire fighting.

revenues meant that for the first time, the Province of Alberta could afford to do some of the things which had been so long advocated. The initial surge of expenditures to 1955-56 largely reflected the building of the Forest Service to extend the administrative structure and services to northern areas, and to build strength in locales where activities generated by mineral exploration and development, settlement, and timber harvesting made it necessary.

Northwestern Pulp and Paper Ltd. signed the first forest management agreement and began building its mill in 1955. Under the impetus of increased focus on timber values combined with the severe fire season of 1956 another surge in development became evident to 1962-63. Increased concern with timber management, more focus on forest renewal, and concerns over integrated land use during the time of heightened environmental awareness in the 1970s brought about the next surge in expenditures from 1973-74 to 1975-76. Budgets in the last three years largely reflect responses to those problem fire years coupled with expanding programs in forest management and renewal. These expenditure levels and trends closely reflect the written descriptions in the annual reports, providing an interesting perspective against which they may be reviewed.

The second chart illustrating adjusted total fire costs distinguishes estimated presuppression costs from actual fire fighting costs from 1931-32. That distinction was not possible during the earlier years, but some observations may be made regardless. Fire-related expenditures began to increase in 1910-11, coincident with protecting the new Forest Reserves. The year 1910 was a serious one throughout the west which undoubtedly helped to support increased expenditures over the next few years. The fire years 1913 and 1914 are an interesting contrast. The annual report referred to 1913 as a very satisfactory year with respect to fires, with favorable weather keeping losses to a minimum. The following year 1914 was described as the worst since 1910. However, the expenditure levels for those two years show very little difference. This suggests that the Forest Service at that time did not have a great capacity to incur extra expenses in fire fighting since most action involved manpower and there was not a great deal of it readily available. Similarly, the year 1917 was described as the most serious since 1914, and the years 1919 and 1920 both experienced extensive burns - yet those expenditure years do not show significant increases either.

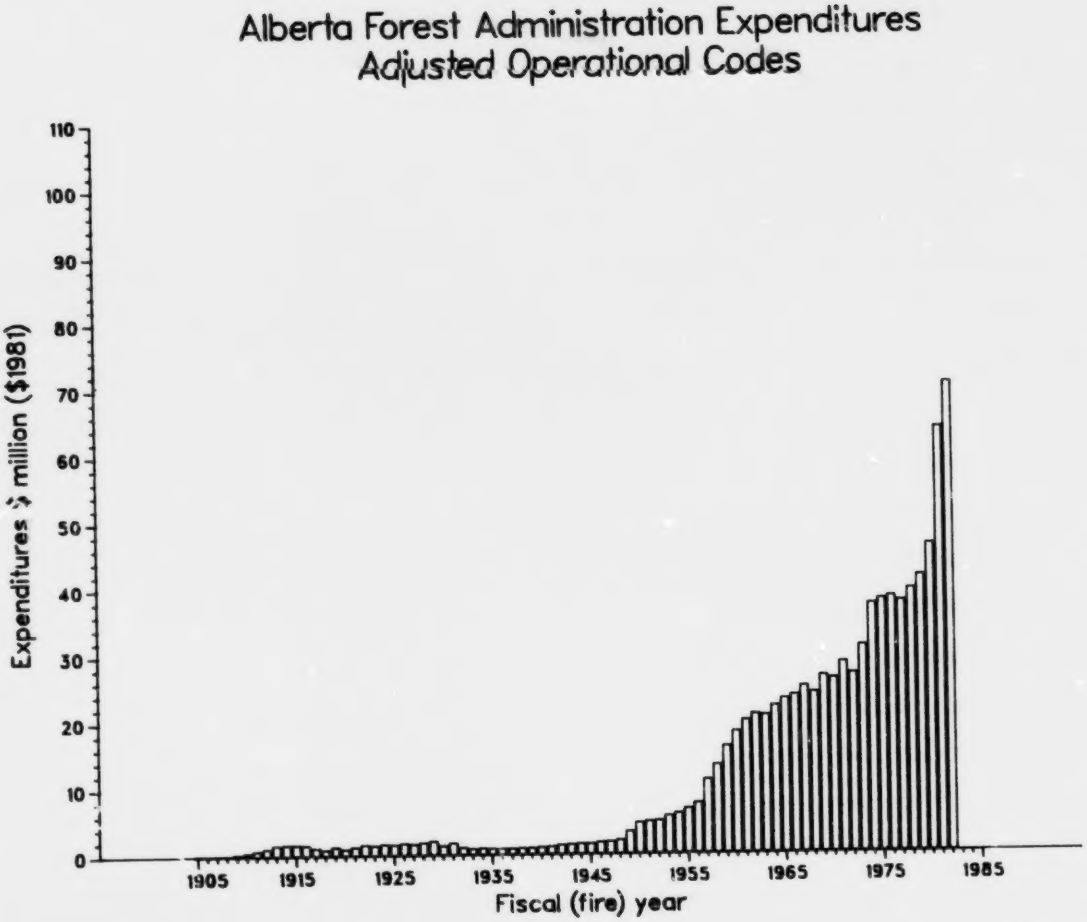


Figure 81. Constant-dollar fire-related costs of pre-suppression and fire fighting.

Some of the peak years begin to show up more prominently after 1930. The fire year of 1931 was described as possibly the most difficult one experienced by any forest protective organization in Alberta. During its first full year of administration the Forest Service undoubtedly tried to do the right thing including hiring from the increasing number of unemployed. The years 1935 and 1936 present another contrast - 1935 described as "outstanding" through favorable distribution of rainfall, whereas as 1936 was a serious one again. However, the relatively low fire fighting expenditures in 1936 reflect the restraint which evidently prevailed during those times of reduced funding, as did the succeeding 'bad' fire years of 1938, 1941, 1944, 1949, and 1950.

The level of presuppression funding began to increase during the late 1940s, as explained earlier, and appeared to level off in 1961, despite the major fire suppression expenditures in 1961. The peak fire years of 1956, 1958, 1959, and 1961 can be clearly identified. The year 1958 was notable since fire fighting costs exceeded $1 million (unadjusted) for the first time. Costs exceeded $2 million (unadjusted) in 1961. Increasing provincial revenues and the advent of high-cost aircraft use were the major contributing factors. No outstanding increases in level of presuppression funding were evident again until 1981 following the major problems encountered in the 1980 fire year. Other significant fire years were 1968 when expenditures exceeded $5 million (unadjusted) for the first time, 1974 when the $6 million level was reached, and 1979 when fire fighting costs rose to over $12 million. The quantum increase in fire fighting costs during 1980, 1981, and 1982 were in response to a combination of increased numbers of fires and severe burning conditions along with a determination to minimize the burned area. The presuppression increase in 1981-82 is clearly evident, designed primarily to enhance initial attack capability.

The question of "how much fire control effort is enough" is still an open question, and the years of major fire loads are cause for concern about ability to adequately respond. The question is now being addressed, through various studies. Regardless of the answer, however, this story illustrates the strides and achievements which can be made by combining the resources of technology and financial support with the incalculable strength of the human spirit.

9. LITERATURE CITED

Alberta. 1932. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1931. Edmonton. p. 28-32.

Alberta. 1933. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1932. Edmonton. p. 40-42.

Alberta. 1934. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1933. Edmonton. 157 p.

Alberta. 1935. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1934. Edmonton. 107 p.

Alberta. 1936. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1935. Edmonton. 129 p.

Alberta. 1937. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1936. Edmonton. 79 p.

Alberta. 1938. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1937. Edmonton. 79 p.

Alberta. 1939a. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1938. Edmonton. 90 p.

Alberta. 1939b. Alberta Forest Service wage scale. Date effective - April 1, 1939. AFS Rulings Book, Edmonton. 1 p.

Alberta. 1940. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1939. Edmonton. 107 p.

Alberta. 1941. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1940. Edmonton. 99 p.

Alberta. 1943. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1942. Edmonton. p. 30-31.

Alberta. 1944. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1943. Edmonton. p. 34-35.

Alberta. 1945. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1944. Edmonton. 127 p.

Alberta. 1946. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1945. Edmonton. 155 p.

Alberta. 1947. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1946. Edmonton. 121 p.

Alberta. 1949. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1948. Edmonton. 159 p.

Alberta. 1950. Annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1949. Edmonton. 136 p.

Alberta. 1951. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1950. Edmonton. 138 p.

Alberta. 1952. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1951. Edmonton. 98 p.

Alberta. 1953. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1953. Edmonton. 100 p.

Alberta. 1954. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1954. Edmonton. 98 p.

Alberta. 1955. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1955. Edmonton. 102 p.

Alberta. 1956. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1956. Edmonton. 108 p.

Alberta. 1958. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1958. Edmonton. 108 p.

Alberta. 1959. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1959. Edmonton. 118 p.

Alberta. 1960. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1960. Edmonton. 166 p.

Alberta. 1961. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1961. Edmonton. 157 p.

Alberta. 1962. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1962. Edmonton. 156 p.

Alberta. 1963. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st, 1963. Edmonton. 128 p.

Alberta. 1965. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1965. Edmonton. 116 p.

Alberta. 1966. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1966. Edmonton. 115 p.

Alberta. 1967. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1967. Edmonton. 123 p.

Alberta. 1968. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1968. Edmonton. 142 p.

Alberta. 1969. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1969. Edmonton. 139 p.

Alberta. 1970. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1970. Edmonton. 149 p.

Alberta. 1971. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1971. Edmonton. p. 40.

Alberta. 1974. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1974. Edmonton. p. 35.

Alberta. 1975. Annual report of the Department of Lands and Forests for the fiscal year ended March 31st. 1975. Edmonton. p. 25.

Alberta. 1976. Annual report of the Department of Energy and Natural Resources for the fiscal year ended March 31st. 1976. Edmonton. p. 9-20.

Alberta. 1977. Annual report of the Department of Energy and Natural Resources for the fiscal year ended March 31st. 1977. Edmonton. p. 25-26.

Alberta. 1978. Annual report of the Department of Energy and Natural Resources for the fiscal year ended March 31st. 1978. Edmonton. p. 33-41.

Alberta. 1980. Annual report of the Department of Energy and Natural Resources for the fiscal year ended March 31st. 1980. Edmonton. p. 30.

Anon. 1969. The first hundred years. The Quaker Oats Co. of Canada Ltd., limited edition 120 p.

Arthur, G.W. 1975. An introduction to the ecology of early historic commual bison hunting among the northern plains Indians. Archaeological Survey of Canada, Paper 37. National Museum of Man, Mercury Series. National Museums of Canada. Ottawa. 136 p.

Asch, M. 1976. Past and present land-use by Slavey Indians of the Mackenzie District. Unpublished summary of evidence before the Mackenzie District Pipeline Enquiry, Yellowknife, N.W.T. Cited in Ferguson 1979.

Barrett, F.W. 1980. Indians and fire. Western Wildlands. Spring 1980. p. 17-21.

Barrett, S.W. and S.F. Arno. 1982. Indian fires as an ecological influence in the northern Rockies. J. Forestry 80(10): 647-651.

Batten, J. 1977. Canada moves westward 1880/1890. Natural Science of Canada Ltd. Toronto. 128 p.

Beck, N.D. ed. 1900. The Territories law reports. 128 p. 1885-1893. The Law Society of the North West Territories. The Carswell Co. Ltd., Toronto. 517 p.

Beck, N.D. ed. 1912. The Territories law reports. 1897-1907. The Law Society of the North West Territories. The Carswell Co. Ltd., Toronto. 522 p.

Berry, G.L. 1953. The Whoop-up trail. Applied Art Products Ltd., Edmonton. 143 p.

Bird, J. 1812. Saskatchewan Journal 1812 & 13. Hudson's Bay Company Archives. B 60/a/11. pp. 2-4.

Blefgen, T.F. 1942. Memorandum to field staff. File O/Head Office/Fires/General. Apr. 20, 1942. Alberta Forest Service. 2 p.

Bliss, J.M. 1966. Canadian history in documents, 1763-1966. Ryerson Press, Toronto. 397 p.

Bridle, A. 1916. Sons of Canada - Short stories of characteristic Canadians. J.M. Dent, Toronto. p. 79-86.

Brennan, J.A. 1979. Re: Fire control standards. Circular memorandum to all forestry personnel, January 15, 1979. Circular FPF.37. Alberta Forest Service, Dept. of Energy and Natural Resources. 1 p.

Bryce, G. 1968. The remarkable history of the Hudson's Bay Company. 2nd edition. Burt Franklin, New York. 501 p.

Byrne, A.R. 1968. Man and landscape change in the Banff National Park area before 1911. Studies in Land Use History and Landscape Change. National Park Series No. 1. U. of Calgary. 173 p. Wesley, London. p. 249. Cited in Byrne 1968.

Cameron, D.R. 1912. Report on timber conditions around Lesser Slave Lake. Bulletin No. 29. Forestry Branch, Dept. of the Interior, Canada. 54 p.

Campbell, R.H. 1911. Forest fires and railways. Bulletin No. 16. Forestry Branch, Dept. of the Interior, Canada. 8 p.

Campbell, R.H. 1919. Forest fires in Canada 1917. Bulletin No. 68. Forestry Branch, Dept. of the Interior, Canada. 24 p.

Canada 1869. Annual report of the Secretary of State for the year 1868. Sessional papers (No. 14). A. 1869. Ottawa.

Canada 1872. Annual report of the Secretary of State for the year ending on the 30th June, 1871. Sessional papers (No. 22). A. 1872. Ottawa.

Canada 1873. Annual report of the Secretary of State for the year ending on the 30th June, 1872. Sessional papers (No. 7). A. 1873. Ottawa.

Canada 1875. Annual report of the Secretary of State for the year ending on the 30th June, 1874. Sessional papers (No. 8). A. 1875. Ottawa.

Canada 1876. Annual report of the Department of the Interior for the year ending 30th June, 1875. Sessional papers (No. 9). A. 1876. Ottawa.

Canada 1877. Annual report of the Department of the Interior for the year ending 30th June, 1876. Sessional papers (No. 11). A. 1877. Ottawa.

Canada 1878. Annual report of the Department of the Interior for the year ending 30th June, 1877. Sessional papers (No. 10). A. 1878. Ottawa.

Canada 1879. Annual report of the Department of the Interior for the year ending 30th June, 1878. Sessional papers (No. 7). A. 1879. Ottawa.

Canada 1880. Annual report of the Department of the Interior for the year ending 30th June, 1879. Sessional papers (No. 4). A. 1880. Ottawa.

Canada 1881. Annual report of the Department of the Interior for the year ending 30th June, 1880. Sessional papers (No. 3). A. 1881. Ottawa.

Canada 1882. Annual report of the Department of the Interior for the year ending 30th June, 1881. Sessional papers (No. 18). A. 1882. Ottawa.

Canada 1883a. Annual report of the Department of the Interior for the year 1882. Sessional papers (No. 23). A. 1883. Ottawa.

Canada 1883b. Official report of the debates of the House of Commons of the Dominion of Canada. First session - fourth parliament.

Canada 1884a. Annual report of the Department of the Interior for the year 1883.

Sessional papers (No. 12). A. 1884. Ottawa.

Canada 1884b. Official report of the debates of the House of Commons of the Dominion of Canada. Second session - fifth parliament. Ottawa. p. 1622.

Canada 1885a. Annual report of the Department of the Interior for the year 1884. Sessional papers (No. 13). A. 1885. Ottawa.

Canada 1885b. Official report of the debates of the House of Commons of the Dominion of Canada. Third session - fifth parliament. Ottawa. p. 202.

Canada 1886. Annual report of the Department of the Interior for the year 1885. Sessional papers (No. 8). A. 1886. Ottawa.

Canada 1887. Annual report of the Department of the Interior for the year 1886. Sessional papers (No. 7). A. 1887. Ottawa.

Canada 1888. Annual report of the Department of the Interior for the year 1887. Sessional papers (No. 14). A. 1888. Ottawa.

Canada 1889a. Annual report of the Department of the Interior for the year 1888. Sessional papers (No. 15). A. 1889. Ottawa.

Canada 1889b. Official report of the debates of the House of Commons of the Dominion of Canada. Third session - sixth parliament. Ottawa. p. 1240-1255.

Canada 1890. Official report of the debates of the House of Commons of the Dominion of Canada. Fourth session - sixth parliament. Ottawa. p. 3315-3316.

Canada 1891. Annual report of the Department of the Interior for the year 1890. Sessional papers (No. 17). A. 1891. Ottawa.

Canada 1892. Annual report of the Department of the Interior for the year 1891. Sessional papers (No. 13). A. 1892. Ottawa.

Canada 1893. Annual report of the Department of the Interior for the year 1892. Sessional papers (No. 13). A. 1893. Ottawa.

Canada 1894a. Annual report of the Department of the Interior for the year 1893. Sessional papers (No. 13). A. 1894. Ottawa.

Canada 1894b. Official report of the debates of the House of Commons of the Dominion of Canada. Fourth session - seventh parliament. Ottawa. p. 4929-4930, 5013-5014.

Canada 1895a. Annual report of the Department of the Interior for the year 1894.

Sessional papers (No. 13). A. 1895. Ottawa.

Canada 1895b. Annual report of the Commissioner of the North West Mounted Police Force 1894. Sessional papers 15A. 1895. Ottawa. p. 12-153.

Canada 1896a. Annual report of the Department of the Interior for the year 1895. Sessional papers (No. 13). A. 1896. Ottawa.

Canada 1896b. Report of the Commissioner of the North West Mounted Police Force 1895. Sessional paper 15, A. 1896. Ottawa.

Canada 1897. Annual report of the Department of the Interior for the year 1896. Sessional papers (No. 13). A. 1897. Ottawa.

Canada 1897b. Annual report of the Commissioner of the North West Mounted Police Force. Sessional papers 15A. 1897. Ottawa. p. 10-117.

Canada 1898. Annual report of the Department of the Interior for the year 1897. Sessional papers (No. 13). A. 1898. Ottawa.

Canada 1899a. Annual report of the Department of the Interior for the year 1898. Sessional papers (No. 13). A. 1899. Ottawa.

Canada 1899b. Official report of the debates of the House of Commons of the Dominion of Canada. Fourth session - eighth parliament. Ottawa. p. 9006-9030.

Canada 1900a. Annual report of the Department of the Interior for the year 1900. Sessional papers (No. 13). A. 1900. Ottawa.

Canada 1900b. Official report of the debates of the House of Commons of the Dominion of Canada. Fifth session - eighth parliament. Ottawa. p. 10408.

Canada 1901a. Annual report of the Department of the Interior for the year 1900. Sessional papers (No. 25). A. 1901. Ottawa.

Canada 1901b. Official report of the debates of the House of Commons of the Dominion of Canada. First session - ninth parliament. Ottawa. p. 1264, 1388-1389, 2670-2698.

Canada 1902a. Annual report of the Department of the Interior for the fiscal period 1900-1901. Sessional papers (No. 25). A. 1902. Ottawa.

Canada 1902b. Report of the North West Mounted Police 1901. Sessional paper 28, A. 1902. Ottawa.

Canada 1903a. Annual report of the Department of the Interior for the fiscal period

1901-1902. Sessional papers (No. 25). A. 1903. Ottawa.

Canada 1903b. Official report of the debates of the House of Commons of the Dominion of Canada. Third session - ninth parliament. Ottawa. p. 6299-6322, 6773-6786.

Canada 1904a. Annual report of the Department of the Interior for the fiscal period 1902-1903. Sessional papers (No. 25). A. 1904. Ottawa.

Canada 1904b. Report of the Royal North-west Mounted Police 1903. Sessional paper 28, A. 1904. Ottawa.

Canada 1905. Annual report of the Department of the Interior for the fiscal period 1903-1904. Sessional papers (No. 25). A. 1905. Ottawa.

Canada 1906a. Annual report of the Department of the Interior for the fiscal period 1904-1905. Sessional papers (No. 25). A. 1906. Ottawa.

Canada 1906b. Official report of the debates of the House of Commons of the Dominion of Canada. Second session - tenth parliament. Ottawa. p. 2832-2886, 3528-3582.

Canada 1906c. Official report of the debates of the House of Commons of the Dominion of Canada. Second session - tenth parliament. Ottawa. p. 5537-5556, 5936-5942.

Canada 1906d. Report of the Royal North-west Mounted Police 1910. Sessional paper 28, A. 1905. Ottawa.

Canada 1907. Annual report of the Department of the Interior for the fiscal period 1905-1906. Sessional papers (No. 25). A. 1907. Ottawa.

Canada 1908. Annual report of the Department of the Interior for the fiscal year ending March 31, 1907. Sessional paper 25. A. 1908. Ottawa.

Canada 1909a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1908. Sessional paper 25. A. 1909. Ottawa.

Canada 1909b. Report of the Royal North-west Mounted Police 1910. Sessional paper 28, A. 1909. Ottawa.

Canada 1910a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1909. Sessional paper 25. A. 1910. Ottawa.

Canada 1910b. Report of the first annual meeting. Commission of Conservation Canada. Ottawa. 216 p.

Canada 1911a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1910. Sessional paper 25. A. 1911. Ottawa.

Canada 1911b. Report of the Royal North-west Mounted Police 1910. Sessional paper 28, A. 1911. Ottawa.

Canada 1911c. Official report of the debates of the House of Commons of the Dominion of Canada. Third session - eleventh parliament. Ottawa. p. 1640-1641, 8084-8086, 8606-8674.

Canada 1912a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1911. Sessional paper 25. A. 1912. Ottawa.

Canada 1912b. Report of the third annual meeting. Commission of Conservation Canada. Ottawa. 154 p.

Canada 1914. Annual report of the Department of the Interior for the fiscal year ending March 31, 1913. Sessional paper 25. A. 1914. Ottawa.

Canada 1915. Annual report of the Department of the Interior for the fiscal year ending March 31, 1914. Sessional paper 25. A. 1915. Ottawa.

Canada 1916a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1915. Sessional paper 25. A. 1916. Ottawa.

Canada 1916b. Official report of the debates of the House of Commons of the Dominion of Canada. Sixth session - twelfth parliament. Ottawa. p. 836-850, 2087-2088.

Canada 1916c. Report of the seventh annual meeting. Commission of Conservation Canada. Ottawa. 283 p.

Canada 1916d. Supplement to homestead maps of Manitoba, Saskatchewan and northern and southern Alberta. Railway Lands Branch,

Canada 1917a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1916. Sessional paper 25. A. 1917. Ottawa.

Canada 1917b. Report of the eighth annual meeting. Commission of Conservation Canada. Ottawa. 344 p.

Canada 1918. Annual report of the Department of the Interior for the fiscal year ending March 31, 1917. Sessional paper 25. A. 1918. Ottawa.

Canada 1920a. Annual report of the Department of the Interior for the fiscal year ending March 31, 1919. Sessional paper 25. A. 1920. Ottawa.

Canada 1920b. Official report of the debates of the House of Commons of the Dominion of Canada. Fourth session - thirteen parliament. Ottawa. p. 3285-3286.

Canada 1922. Annual report of the Department of the Interior for the fiscal year ending March 31, 1921. Sessional paper 25. A. 1922. Ottawa.

Canada 1923. Annual report of the Department of the Interior for the fiscal year ending March 31, 1922. Sessional paper 12. A. 1923. Ottawa. 216 p.

Canada 1924. Annual report of the Department of the Interior for the fiscal year ending March 31, 1923. Sessional paper 12. A. 1924. Ottawa. 163 p.

Canada 1925. Annual report of the Department of the Interior for the fiscal year ending March 31, 1924. Sessional paper 12. A. 1925. Ottawa. 145 p.

Canada 1926. Annual report of the Department of the Interior for the fiscal year ending March 31, 1925. Ottawa. 138 p.

Canada 1927. Annual report of the Department of the Interior for the fiscal year ending March 31, 1926. Ottawa. 139 p.

Canada 1928. Annual report of the Department of the Interior for the fiscal year ending March 31, 1927. Ottawa. 130 p.

Canada 1929. Annual report of the Department of the Interior for the fiscal year ending March 31, 1928. Ottawa. 144 p.

Canada 1930. Annual report of the Department of the Interior for the fiscal year ending March 31, 1929. Ottawa. 166 p.

Canada 1931. Annual report of the Department of the Interior for the fiscal year ending March 31, 1930. Ottawa. 166 p. Ottawa. p. 882-888. Dept. of the Interior, Ottawa. 13 p.

CCREM 1976a. Forest policies in Canada - Volume I. Prepared for the Canadian Council of Resource and Environment Ministers, CCREM task force on forest policy, June 1976. 99 p.

CCREM 1976b. Forest policies in Canada - Volume II. Prepared for the Canadian Council of Resource and Environment Ministers, CCREM task force on forest policy, June 1976. 298 p.

Chambers, J. ed. 1910. The great Mackenzie Basin. The Senate Report of 1887 [illegible]888. Issued by direction of Hon. Frank Oliver. Minister of the Interior, Canada. 80 p.

Chiovelli, N.F. 1984. Letter to P.J. Murphy 1984 09 04, 2 p. + atts.

Cox, W.H. 1935. Dairy of a mountie. Lethbridge Herald, July 11, 1935.

Dawson, G.M. 1886. Preliminary report on the physical and geological features of that portion of the Rocky Mountains between latitudes 49 degrees and 51 degrees 30'. *In*: Annual report, Volume 1, 1885. Geological & Natural History Survey of Canada. pp. 36B-37B. 775 p. Cited in Parminter 1978.

Destrube, M. 1981. Pioneering in Alberta: Maurice Destrube's story. Alberta Records Pub'l Bd., Historical Soc. of Alberta. 172 p.

Doucet, J.A. 1915. Timber conditions in the Smoky River Valley and Grande Prairie country - being a continuation of "Timber conditions in the Little Smoky River Valley" (Bulletin No. 41). Bulletin No. 53. Forestry Branch, Dept. of the Interior, Canada. 55 p.

Douglas, D. 1914. Journal kept by David Douglas during his travels in North America, 1823-27. Wesley, London. p. 249. Cited in Byrne 1968.

Dwight, T.W. 1918. Forest fires in Canada 1914-15-16. Bulletin No. 64. Forestry Branch, Dept. of the Interior, Canada. 445 p.

Edgecombe, G.H. and P.Z. Caverhill. 1911. Rocky Mountains forest reserve. Report of boundary survey parties. Bulletin No. 18. Forestry Branch, Dept. of the Interior, Canada. 16 p.

Edmonton Bulletin 1933. The Edmonton Bulletin. Edmonton, Alberta. Friday, March 31, 1933. p. 1.

Ferguson, T.A. 1979. Productivity and predictability of resource yield: aborigional controlled burning in the boreal forest. Master of Arts thesis, Dept. of Anthropology. The University of Alberta, Edmonton. 145 p.

Forestry Branch. ca. 1917. Manual of instructions for forest rangers - Bow River Forest Reserve. Bow River, Forestry Branch, Dept. of the Interior, Calgary. Typewritten ms. 100 p.

Fraser, E. 1969. The Canadian Rockies - early travels and explorations. M.G. Hurtig, Edmonton. 252 p.

Goff, L.D. 1979. Protection organizations and responsibilities. *In*: Proceedings of the International Fire Management Workshop sponsored by the Intermountain Fire Research Council, D. Quintilio compiler. Information Report NOR-X-215. Canadian Forestry Service, Environment Canada. Ottawa. p. 2-3.

Grahame, J.A. 1874a. Memorandum to Richard Hardisty, Esq., Edmonton House, 28th December 1874. Hudson's Bay Company Archives. D 14/2. p. f62: 71-72.

Grahame, J.A. 1874b. Circular to Post managers, 14th December 1874. Hudson's Bay Company Archives. D 14/2. p. f62: 72.

Grisdale, J.H. 1913. Preparing lands for grain crops on the prairies. Bulletin No. 15, 2nd series, Dominion Experimental Farms, The Railway Lands Branch. Dept. of the Interior. 23 p.

Grove-Smith, J. 1918. Fire waste in Canada. Commission of Conservation Canada. Ottawa. 319 p.

Hanson, W.R. 1973. History of the Eastern Rockies Forest Conservation Board 1947-1973. Report by W.R. Hanson, Chief Forester in collaboration with members of the Eastern Rockies Forest Conservation Board. Calgary. 55 p.

Harvie, J. 1951. Memorandum to E. S. Huestis, Director of Forestry, from J. Harvie, Deputy Minister, May 2nd, 1951 (copy). Alberta Forest Service, file F 5. 1 p.

Harper, J.R. 1971. Paul Kane's frontier. University of Toronto Press. 350 p.

Hearne, S. 1971. A journey from Prince of Wales's Fort in Hudson's Bay to the northern ocean. M. C. Hurtig, Edmonton. 458 p.

Hellum, A.K. (1980 nd) Fire and the forests of Alberta - a forester's comment. Dept. For. Sci., U. of Alberta. Unpubl. ms. 11 p.

Hendry, A. 1755. Journal of Anthony Hendry - York Factory to the Blackfoot country 1754-55. In Trans. Royal Soc. Canada. Ed. L. J. Burpee, Third series 1907-08. pp. 307-359.

Hendry, A. (the younger) and D. Thompson. 1965. New light on the early history of the greater northwest. Ed. E. Coues, 2 vols. Minneapolis. Cited in Nelson 1973.

Hind, H.Y. 1859. North West Territories. Reports of progress: together with a preliminary and general report on the Assiniboine and Saskatchewan exploring expedition made under instructions from the Provincial Secretary, Canada. Legislative Assembly, Toronto. pp. 31, 52. Cited in Warkentin 1973.

Hind, H.Y. 1860. Narrative of the Canadian exploring expedition of 1857 and of the Assiniboine and Saskatchewan expedition of 1858. 2 vols. London. p. 292. Cited in Nelson 1973.

Hind, H.Y. 1971. Narrative of the Canadian Red River exploring expedition of 1857 and of the Assiniboine and Saskatchewan exploring expeditions of 1858. Two volumes in one. M.G. Hurtig, Edmonton. Cited in Arthur 1975.

Hudson's Bay Co. 1877. Journal of Transactions at Carlton House 1827/28. Hudson's Bay Company Archives. B 27/a/16. p. f13.

Huestis, E.S. 1952a. Re: Burning permits. Memorandum to all N.A.F.D. Personnel and Brazeau - Athabasca Personnel, from E. S. Huestis, Director of Forestry, March 24, 1952. Alberta Department of Lands and Forests Circular No. F 9, File: Head Office Fire Closure (F. 10). 1 p.

Huestis, E.S. 1952b. Re: Use of bulldozers on fires. Memorandum to Forest Service Personnel from E. S. Huestis, Director of Forestry, May 5, 1952. Alberta Department of Lands and Forests Cicular No. F 5, File: Head Office Fire General. 1 p.

Huestis, E.S. 1972. Text of a talk by Eric Huestis - Deputy Minister of Lands and Forests - given to a group of new Forest Officers at the first orientation course at the Forest Technology School - January 31, 1972. Forest Technology School, Hinton, Alberta. 39 p.

Huestis, E.S. 1983. Interview, 26 September by Peter J. Murphy. Tapes on file at U. of Alberta.

Hughes, S.R. 1971a. Re: Policies for government approval. Memorandum to R.G. Steele, Director of Forestry, Alberta Forest Service, Dept. of Lands and Forests. Dec. 1, 1971. 4 p.

Hughes, S.R. 1971b. Re: Rural fire control. Memorandum from S.R. Hughes to R.G. Steele, Director of Forestry, Alberta Forest Service, Dept. of Lands and Forests. Dec. 7, 1971. 3 p.

Hughes, S.R. 1974. Fire permit issuance guidelines. Memorandum from S.R. Hughes to F.W. McDougall, Director of Forestry, Alberta Forest Service, Dept. of Lands and Forests. April 19, 1974. 2 p.

Hutchinson, J.A. 1938. Alberta Forest Service instructions for forest rangers and assistant forest rangers. Issued by J. A. Hutchinson, January 7th, 1938. 35 p. + att. mimeo.

Huth, R. 1980. Horses to helicopters - story of the Alberta Forest Service. Alberta Forest

Service, Alberta Energy and Natural Resources. Edmonton. 103 p.

Jensen, H.G. 1952. Re: 10 Mile Fire - fighting limit in North. Memo to E. S. Huestis, Director of Forestry, from H. G. Jensen, Deputy Minister of Lands and Forests, Alberta, September 16th, 1952. File H.O. F. 12. 1 p.

Johnstone, K. 1973. Tales of men and timber: 75 years with the Canadian Forestry Service. 5th draft. Ed. by T. G. Honer. Pacific For. Res. Centre, Environment Canda. Unpubl. ms. 408 p.

Kiil, A.D. 1979. Fire research programs and issues in mid-Canada. In: Proceedings of International Fire Management Workshop. sponsored by Intermountain Fire Research Council, D. Quintilio compiler. Information Report NOR-X-215. Canadian Forestry Service, Environment Canada. p. 5-14.

Kitto, F.H. 1930. The Peace River County Canada - its resources and opportunities. National Development Bureau, Canada Department of the Interior. Ottawa. Third ed. rev. 115 p.

Knechtel, A. 1908a. Planting and care of a forest of evergreens. Bulletin No. 2, Forestry Branch, Department of the Interior, Canada. 8 p.

Knechtel, A. 1908b. The Dominion forest reserves. Bulletin No. 3. Forestry Branch, Dept. of the Interior, Canada. 19 p.

Kovach, J. 136. Individual fire report: Pass Creek Fire. Department of Lands and Mines individual fire report, Edmonton. Alberta. 4 p. + map.

Leavitt, C. 1913. Forest protection in Canada, 1912. Commission of Conservation Canada. Ottawa. 174 p.

Leavitt, C. 1915. Forest protection in Canada 1913-1914. Commission of Conservation Canada. Ottawa. 317 p.

Lewis, R.G. 1920. Forest fires in Canada 1918. Bulletin No. 70. Forestry Branch, Dept. of the Interior, Canada. 20 p.

Lewis, H.T. 1977. Maskuta; the ecology of Indian fires in northern Alberta. Western Can. Jour. of Anth. 7(1): 15-56.

Lewis, H.T. 1980. Hunter-gatherers and problems for fire history. Proc. of the Fire History Workshop, October 20-24, 1980, Tucson, Arizona. USDA Forest Service, Rocky Mountains Forest and Range Exp. Sta. Gen. Tech. Rep. RM-81. p.115-119.

Lewis, H.T. 1982. A time for burning. Occ. Pap. 17. Boreal Inst. for Northern Studies. U. of Alberta. 62 p.

Little, J. 1876. The timber supply question, of the Dominion of Canada and the United States of America. Second edition with additions. Lovell Printing & Publishing Co., Montreal. 26 p.

Lutz, H.J. 1959. Aboriginal men and white men as historical causes of fires in the boreal forest, with particular reference to Alaska. Yale University, School of Forestry Bulletin, No. 65. 42 p.

Macdonald, Hon. J. A. 1871. Letter to Sandfield Macdonald dated June 22nd, 1871. Cited in Forest History XI(3): 25-26.

MacGregor, J.G. 1952. The land of twelve foot Davis - a history of the Peace River Country. Applied Art Products, Edmonton. 395 p.

MacGregor, J.G. 1972. A history of Alberta. Hurtig Publishers, Edmonton. 335 p.

MacMillan, H.R. 1909a. Forest conditions in the Crow's Nest Valley, Alberta. Bulletin No. 5. Forestry Branch, Dept. of the Interior, Canada. 22 p.

Mackenzie, A. 1971. Voyages from Montreal on the River St. Laurence through the continent of North America to the frozen and Pacific Oceans in the years 1789 and 1793. M. G. Hurtig, Edmonton. 412 p.

MacMillan, H.R. 1909b. Forest fires in Canada during 1908. Bulletin No. 7. Forestry Branch, Dept. of the Interior, Canada. 8 p.

MacMillan, H.R. and G.A. Gutches. 1910. Forest fires in Canada. 40 p. Bulletin No. 9. Forestry Branch, Dept. of the Interior, Canada.

McDougall, F.W. 1977. Re: Firefighting policy, restoration and erosion control. Circular memorandum to all forestry personnel, Dec. 1, 1977. Circular FPF. 10. Alberta Forest Service, Dept. of Energy and Natural Resources. 6 p.+ 2 p. Appendix.

McDougall, F.W. 1980. Wildfires in Alberta - planning for them and against them. Talk presented to Western Forestry and Conservation Association, Victoria, B.C. December 1980. Original MS. 14 p.

McDougall, J. 1896. Saddle, sled and snowshoe: pioneering on the Saskatchewan in the sixties. Wiliam Briggs, Toronto. 282 p.

McDougall, J. 1971. Parsons on the plains. Ed. Thomas Bredon. Longman Canada, Don

Mills. 193 p.

McInnis, E. 1947. Canada - a political and social history. Rinehart and Co., Toronto. 619 p.

McKee, R.G. 1965. Fire protection in British Columbia. *In*: Loggers Handbook. Vol. XXV. Pacific Logging Congress, Portland, Oregon. p. 94-96.

McKenzie, C.G. 1933. Individual fire report: Pocaterra Fire. Department of Lands and Mines individual fire report, Edmonton. 2 p. + map.

Miyagawa, R.S. 1971. Re: Cameron and Caribou Hills area protection policy. Memorandum from R.S. Miyagawa to S.R. Hughes, Head of Forest Protection Branch, Alberta Forest Service, Dept. of Lands and Forests. April 15, 1971. 3 p.

Miyagawa, R. 1979. Legislative and economic realities - An Alberta viewpoint. Proc. Fire Control in the 80's. Symposium sponsored by Intermountain Fire Council, Missoula, Montana. p. 53-62.

M'Lean, J. 1849. Notes of a twenty-five years' service in the Hudson's Bay territory. Reprinted as John M'Lean's notes of a twenty-five years' service in the Hudson's Bay territory, Greenwood Press, New York. 1968. 402 p.

Murphy, P.J. 1978. Fire research at the University of Alberta. *In*: Fire ecology in resource management. Compiled by D. E. Dube. Northern Forest Research Centre. Info. Rept. NOR-X-210. Environment Canada, Edmonton. pp. 90-91.

Murphy, P.J. 1983. The great fire of 1919 - Alberta-Saskatchewan. Legend for references on 15 June 1983 draft map. Dept. Forest Science. U. of Alberta. Unpubl. 4 p.

Murphy, P.J. 1984. Bases for evaluating the effect of forest fire management in Alberta. Draft Ph.D. dissertation, UBC. Dec. 28, 1984. 121 p. + app.

Nelson, J.G. 1973. Animals, fire and landscape in the northwestern plains of North America in pre and early European days. In Prairie Perspectives 2. Holt, Rinehart and Winston of Canada. Toronto. pp. 63-79.

N.W.T. 1877a. Journal of the Council of the North West Territories of Canada. Session of 1877. Regina. p. 1-26.

N.W.T. 1877b. Ordinances of the Lieut.-Governor and Council of the North-west Territories. Printed by Brown Chamberlin. Law printer to the Queen's Most Excellent Majesty. Anno. Domini 1877. Ottawa.

N.W.T. 1878. Journal of the Council of the North West Territories of Canada. Session of 1878. Regina. p. 41.

N.W.T. 1879. Journal of the Council of the North West Territories of Canada. Session of 1879. Regina. p. 12-13.

N.W.T. 1883. Journal of the Council of the North West Territories of Canada. Session of 1883. DMP 32.

N.W.T. 1884. Journal of the Council of the North West Territories of Canada. Session of 1884. Regina. p. 6-54.

N.W.T. 1885. Journal of the Council of the North West Territories of Canada. Session of 1885. Regina. p. 26.

N.W.T. 1886. Journal of the Council of the North West Territories of Canada. Session of 1886. Regina. p. 21-105.

N.W.T. 1887. Journal of the Council of the North West Territories of Canada. Session of 1887. Regina. p. 9-113.

Nyland, E. 1969. This dying watershed. Alberta Lands Forests Parks Wildlife. Dept. Lands and Forests. 12(3): 22-38.

Oliver, E.H. 1914. The Canadian North West - its early development and legislative records - Minutes of the Council of the Red River colony and the Northern Department of Rupert's Land. (Volume I) Publication of the Canadian Archives, No. 9. Government Printing Bureau, Ottawa. p. 1-688.

Oliver, E.H. 1915. The Canadian North West - its early development and legislative records - Minutes of the Council of the Red River colony and the Northern Department of Rupert's Land. (Volume II) Publication of the Canadian Archives, No. 9. Government Printing Bureau, Ottawa. p. 689-1348.

Palliser, J. 1863. Journals, detailed reports, and observations, relative to Palliser's exploration of British North America, 1857, 1858, 1859, 1860. Parliamentary Blue Book. London. Cited in Arthur 1975.

Palmer, C.A.G. ed. 1960. Canadian encyclopedic digest - western. Second edition, Volume II. Burroughs and Co. Ltd., Calgary. 524 p.

Parminter, J.V. 1978. An historical review of forest fire management in British Columbia. Essay submitted in the Department of Forestry, U. of British Columbia. 111 p.

Pearce, W. 1896a. Letter to R. A. Ruttan Esq., A.D.L. Edmonton, Alberta, dated 26th February, 1896. The Archives, Univ. of Alberta. Acc. No. 74-169-125. 1 p.

Pearce, W. 1896b. Letter to R. A. Ruttan Esq., A.D.L. Edmonton, Alberta, dated 12th March, 1896. The Archives, Univ. of Alberta. Acc. No. 74-169-125. 3 p.

Platt, C.F. 1959. Fire suppression. Paper presented to the Natural Resources Conference, Edmonton, sponsored by Alberta Department of Lands and Forests, January 1959. 4 p. mimeo + att.

Platt, C.F. 1959. Aerial fire suppression planning for Alberta's forest service. Pulp and Paper Mag. of Canada. 60(10): 242-249.

Platt, C.F. 1984. Letter to P.J. Murphy from April 1984. 2 p.

Pruden, J.P. 1836. Carlton Journal 1836 & 37. Hudson's Bay Company Archives. B 27/a/22. pp. f 14-15.

Pyne, S.J. 1983. Indian fires. Natural History. 92(2): 6-11.

Rakestraw, L. 1983. Fire in America: a cultural history of wildland and rural fire, by Stephen J. Pyne. Book review. Jour. Forest History/ 27(1):42-44.

Rich, E.E. and A.M. Johnson eds. 1952. Cumberland and Hudson House Journal and Inland Journal, 1775-82. First series 1775-79. Hudson's Bay Record Society, London. pp. 59-101. Cited by Thomas (1977) in original paper in Hudson's Bay Archives, Winnipeg.

Robertson, H. 1974. Salt of the earth - the story of the homesteaders in western Canada. James Lorimer and Co., Toronto. 224 p.

Rocky Mountain Section 1954. Summary of "Forest fire protection in Alberta: a review and recommendations". Prepared by Rocky Mountain Section, Canadian Institute of Forestry, Edmonton. Jan. 1954. 8 p.

Rocky Mountain Section 1955. Forest fire protection in Alberta - a review and recommendations. A brief prepared by the Rocky Mountain Section of the Canadian Institute of Forestry, Edmonton. March 1955. 41 p.

Roder, R.J. 1964. The great fire of 1909. Western Producer, Thurs. Oct. 29, 1964. 42(13): pp. 17, 19.

Roe, F.G. 1934. The extirmination of the buffalo in western Canada. Can. Historical Rev. XV(1): 1-23.

Rowand, J. 1828. Memorandum for Messrs. Fisher and Linton respecting the affairs of upper Saskatchewan Summer 1828, 19th May 1828. Saskatchewan Journal - Edmonton House. Hudson's Bay Company Archives. 60/a/25. pp. f 60-61.

Rowe, J.S. 1969. Lightning fires in Saskatchewan grasslands. Can. Field-Naturalist 83: 317-324.

Rundle, R. 1977. The Rundle journals 1840-1848. Historical Soc. of Alberta and Glenbow. Alberta Inst., Calgary. 414 p.

Ruttan, R.A. 1896. Letter to Wm. Pearce Esq., Supt. of Mines, Calgary, dated 4th March, 1896. The Archives, Univ. of Alberta. Acc/ Mp/ 74-169-125. 3 p.

Schweger, C., T. Habgood and M. Hickman. 1981. Late glacial-holocene climatic changes of Alberta - the record from lake sediment studies. Dept. of Anthropology, University of Alberta. Unpubl. ms 3 p.

Smith, C.B. 1981. Letter to P.J. Murphy from C.B. Smith, Director of Forest Protection, Alberta Forest Service, Dept. of Energy and Natural Resources. April 16, 1981. 2 p.

Southesk, J. C. Earl of. 1969. Saskatchewan and the Rocky Mountains - a diary and narrative of travel, sport, and adventure, during a journey through the Hudson's Bay Company's territories in 1859 and 1860. Charles E. Tuttle, Vermont, 448 p.

Steele, R.G. 1967. Re: Recruitment of fire fighters. Memorandum to all forestry personnel, Feb. 9, 1967. Circular F. 20, Alberta Forest Service. 1 p.

Steele, R.G. 1968. Re: Firefighting policy. Circular memorandum to all forestry personnel. Circular No. F. 13. April 29, 1968. Alberta Forest Service, Dept. of Lands and Forests. 4 p.

Steele, S.B. 1915. Forty years in Canada. Russell Lang. Winnipeg. Cited in Arthur 1975.

Steen, R. and Hendrickson, M. 1944. Pioneer Days in Bardo, Alberta. The historic society of Beaver Hills Lake, Tofield, Alberta. p. 59-67.

Stephenson, W. 1977. Dawn of the nation 1860/1870. Natural Science of Canada Ltd., Toronto, Ont. 128 p.

Stocks, B.J. and R.J. Barney. 1981. Forest fire statistics for northern circumpolar countries. Canadian Forestry Service, Environment Canada. Report O-X-322. 23 p.

Thomas, G. 1977. Fire and the fur trade - the Saskatchewan District: 1790-1840. The Beaver, Autumn 1977. Outfit 308.2, pp. 33-39.

Warkentin, J. 1973. Steppe, desert and empire. In Prairie Perspectives 2. Holt, Rinehart and Winston of Canada. Toronto. pp. 102-136.

Wileman, H.J. 1936. Individual fire report: Highwood Fire. Department of Lands and Mines individual fire report, Edmonton, Alberta. 4 p. + map.

10. APPENDIX

10.1 A. GENERAL REFERENCES

10.1.1 Summary of Forest Administration Agencies

Summary of Forestry Administration Agencies and Major Officials from 1870

FEDERAL FORESTRY ADMINISTRATION

YEAR	DEPARTMENT	PARTY	PREMIER	MINISTER	DEPUTY	FORESTRY AGENCY	HEAD	TITLE
1870	Secretary of State	C	Sir. J. A. Macdonald	J.C. Aikins				
1871	Secretary of State	C	Sir. J. A. Macdonald	J.C. Aikins				
1872	Secretary of State	C	Sir. J. A. Macdonald	R.W. Scott				
1873	Dept. of the Interior	C	Sir. J. A. Macdonald	A. Campbell				
1874	Dept. of the Interior	C	Sir. J. A. Macdonald	David Laird				
1875	Dept. of the Interior	L	Hon. A. Mackenzie	David Laird				
1876	Dept. of the Interior	L	Hon. A. Mackenzie	David Mills				
1877	Dept. of the Interior	L	Hon. A. Mackenzie	David Mills				
1878	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald				
1879	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald				
1880	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald				
1881	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald				
1882	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald				
1883	Dept. of the Interior	C	Sir J. A. Macdonald	Sir J.A. Macdonald	A. M. Burgess			
1884	Dept. of the Interior	C	Sir J. A. Macdonald	Sir D. Macpherson	A. M. Burgess			
1885	Dept. of the Interior	C	Sir J. A. Macdonald	Sir D. Macpherson	A. M. Burgess			
1886	Dept. of the Interior	C	Sir J. A. Macdonald	Thos. White	A. M. Burgess			
1887	Dept. of the Interior	C	Sir J. A. Macdonald	Thos. White	A. M. Burgess			
1888	Dept. of the Interior	C	Sir J. A. Macdonald	Edgar Dewdney	A. M. Burgess			
1889	Dept. of the Interior	C	Sir J. A. Macdonald	Edgar Dewdney	A. M. Burgess			
1890	Dept. of the Interior	C	Sir J. A. Macdonald	Edgar Dewdney	A. M. Burgess			

YEAR	DEPARTMENT	PARTY	PREMIER	MINISTER	DEPUTY	AGENCY	HEAD	TITLE
1891	Dept. of the Interior	C	Sir J. A. Macdonald	E. Dewdney	A. M. Burgess			
1892	Dept. of the Interior	L	Sir J. J. C. Abbott	T. Mayne Daly	A. M. Burgess			
1893	Dept. of the Interior	L	Sir J. S. D. Thompson	T. Mayne Daly	A. M. Burgess			
1894	Dept. of the Interior	L	Sir J. S. D. Thompson	T. Mayne Daly	A. M. Burgess			
1895	Dept. of the Interior	L	Sir Mackenzie Bowell	T. Mayne Daly	A. M. Burgess			
1896	Dept. of the Interior	L	Sir Charles Tupper	Hugh J. Macdonald	A. M. Burgess			
1897	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart			
1898	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart			
1899	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart			
1900	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart	Forestry	Elihu Stewart	Chief Inspector of Timber & Forestry
1901	Dept. of the Interior	L	Sir Wilfred Larurier	Clifford Sifton	Jas A. Smart	Forestry	Elihu Stewart	Chief Inspector of Timber & Forestry
1902	Dept. of the Interior	L	Sir Wilfred Larurier	Clifford Sifton	Jas A. Smart	Forestry	Elihu Stewart	Chief Inspector of Timber & Forestry
1903	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart	Forestry	Elihu Stewart	Chief Inspector of Timber & Forestry
1904	Dept. of the Interior	L	Sir Wilfred Laurier	Clifford Sifton	Jas A. Smart	Forestry	Elihu Stewart	Superintendent of Forestry
1905	Dept. of the Interior	L	Sir Wilfred Laurier	Frank Oliver	Jas A. Smart	Forestry	Elihu Stewart	Superintendent of Forestry
1906	Dept. of the Interior	L	Sir Wilfred Laurier	Frank Oliver	W. W. Cory	Forestry	Elihu Stewart	Superintendent of of Forestry
1907	Dept. of the Interior	L	Sir Wilfred Laurier	Frank Oliver	W. W. Cory	Forestry	R. H. Campbell	Superintendent of Forestry
1908	Dept. of the Interior	L	Sir Wilfred Oliver	Frank Oliver	W. W. Cory	Forestry	R. H. Campbell	Superintendent of Forestry
1909	Dept. of the Interior	L	Sir Wilfred Oliver	Frank Oliver	W. W. Cory	Forestry/ Irrigation	R. H. Campbell	Superintendent of Forestry
1910	Dept. of the Interior	L	Sir Wilfred Oliver	Frank Oliver	W. W. Cory	Forestry/ Irrigation	R. H. Campbell	Superintendent of Forestry
1911	Dept. of the Interior	L	Sir Wilfred Laurier	Frank Oliver	W. W. Cory	Forestry/ Irrigation	R. H. Campbell	Superintendent of Forestry
1912	Dept. of the Interior	C	Sir Robert Borden	Robert Rogers	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry

YEAR	DEPARTMENT	PARTY	PREMIER	MINISTER	DEPUTY	AGENCY	HEAD	TITLE
1913	Dept. of the Interior	C	Sir Robert Borden	W. J Roche	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1914	Dept. of the Interior	C	Sir Robert Borden	W. J. Roche	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1915	Dept. of the Interior	C	Sir Robert Borden	W. J. Roche	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1916	Dept. of the Interior	C	Sir Robert Borden	W. J. Roche	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1917	Dept. of the Interior	C	Sir Robert Borden	W. J. Roche	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1918	Dept. of the Interior	C	Sir Robert Borden	A. Meighen	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1919	Dept. of the Interior	C	Sir Robert Borden	A. Meighen	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1920	Dept. of the Interior	C	Arthur Meighen	A. Meighen	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1921	Dept. of the Interior	L	W. L. Mackenzie	Sir J. Lougheed	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1922	Dept. of the Interior	L	W. L. Mackenzie	Charles Stewart	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1923	Dept. of the Interior	L	W. L. Mackenzie	Charles Stewart	W. W. Cory	Forestry	R. H. Campbell	Director of Forestry
1924	Dept. of the Interior	L	W. L. Mackenzie	Charles Stewart	W. W. Cory	Forestry	E. H. Finlayson	Acting Director of Forestry
1925	Dept. of the Interior	L	W. L. Mackenzie	Charles Stewart	W. W. Cory	Forestry	E. H. Finlayson	Director of Forestry
1926	Dept. of the Interior	L	W. L. Mackenzie	R. B. Bennett	W. W. Cory	Forestry	E. H. Finlayson	Director of Forestry
1927	Dept. of the Interior	L	W. L. Mackenzie	Charles Stewart	W. W. Cory	Forestry	E. H Finlayson	Director of Forestry
1928	Dept. of the Interior	L	W. L. Mackenzie	C. Stewart	W. W. Cory	Forestry	E. H. Finlayson	Director of Forestry
1929	Dept. of the Interior	L	W. L. Mackenzie	C. Stewart	W. W. Cory	Forestry	E. H. Finlayson	Director of Forestry
1930	Dept. of the Interior	C	W. L. Mackenzie	C. Stewart	W. W. Cory	Forestry	E. H. Finlayson	Director of Forestry
1931	Dept. of the Interior	C	R. B. Bennett	Thomas Murphy	H. H. Rowatt	Forestry	E. H. Finlayson	Director of Forestry

Compiled from Department of the Interior annual reports, adjusted with reference to Johnstone (1973).

PROVINCIAL FORESTRY ADMINISTRATION

FIRE SEASON	DEPARTMENT	MINISTER	DEPUTY MINISTER	DIRECTOR OF FORESTRY	TITLE
1930	Dept. of Lands & Mines	R. G. Reid	John Harvie	T. F. Blefgen	Director of Forestry
1931	Dept. of Lands & Mines	R. G. Reid	John Harvie	T. F. Blefgen	Director of Forestry
1932	Dept. of Lands & Mines	R. G. Reid	John Harvie	T. F. Blefgen	Director of Forestry
1933	Dept. of Lands & Mines	R. G. Reid	John Harvie	T. F. Blefgen	Director of Forestry
1934	Dept. of Lands & Mines	H. W. Allen	John Harvie	T. F. Blefgen	Director of Forestry
1935	Dept. of Lands & Mines	C. C. Ross	John Harvie	T. F. Blefgen	Director of Forestry
1936	Dept. of Lands & Mines	C. C. Ross	John Harvie	T. F. Blefgen	Director of Forestry
1937	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1938	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1939	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1940	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1941	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1942	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1943	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1944	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1945	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1946	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1947	Dept. of Lands & Mines	N. E. Tanner	John Harvie	T. F. Blefgen	Director of Forestry
1948	Dept. of Lands & Mines	N. E. Tanner	John Harvie	F. S. Huestis	Asst. Director of Forestry
1949	Dept. of Lands & Forests	N. E. Tanner	John Harvie	E. S. Huestis	Director of Forestry
1950	Dept. of Lands & Forests	N. E. Tanner	John Harvie	E. S. Huestis	Director of Forestry
1951	Dept. of Lands & Forests	N. E. Tanner	John Harvie	E. S. Huestis	Director of Forestry
1952	Dept. of Lands & Forests	Ivan Casey	H. G. Jensen	E. S. Huestis	Director of Forestry
1953	Dept. of Lands & Forests	Ivan Casey	H. G. Jensen	E. S. Huestis	Director of Forestry
1954	Dept. of Lands & Forests	Ivan Casey	H. G. Jensen	E. S. Huestis	Director of Forestry
1955	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1956	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1957	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1958	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1959	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1960	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1961	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1962	Dept. of Lands & Forests	Norman Willmore	H. G. Jensen	E. S. Huestis	Director of Forestry
1963	Dept. of Lands & Forests	Norman Willmore	E. S. Huestis	R. G. Steele	Director of Forestry
1964	Dept. of Lands & Forests	H. A. Ruste	E. S. Huestis	R. G. Steele	Director of Forestry
1965	Dept. of Lands & Forests	H. A. Ruste	E. S. Huestis	R. G. Steele	Director of Forestry
1966	Dept. of Lands & Forests	H. A. Ruste	V. A. Wood	R. G. Steele	Director of Forestry
1967	Dept. of Lands & Forests	H. A. Ruste	V. A. Wood	R. G. Steele	Director of Forestry
1968	Dept. of Lands & Forests	H. A. Ruste	V. A. Wood	R. G. Steele	Director of Forestry
1969	Dept. of Lands & Forests	J. D. Ross	V. A. Wood	R. G. Steele	Director of Forestry
1970	Dept. of Lands & Forests	J. D. Ross	V. A. Wood	R. G. Steele	Director of Forestry
1971	Dept. of Lands & Forests	A. A. Warrack	V. A. Wood	R. G. Steele	Director of Forestry
1972	Dept. of Lands & Forests	A. A. Warrack	V. A. Wood	R. G. Steele	Director of Forestry
1973	Dept. of Lands & Forests	A. A. Warrack	R. G. Steele	F. W. McDougall	Director of Forestry
1974	Dept. of Lands & Forests	A. A. Warrack	R. G. Steele	F. W. McDougall	Director of Forestry

FIRE SEASON	DEPARTMENT	MINISTER	DEPUTY MINISTER	DIRECTOR OF FORESTRY	TITLE
1975	Dept. of Energy & Natural Resources	D. R. Getty	R. G. Steele	F. W. McDougall	Director of Forestry
1976	Dept. of Energy & Natural Resources	D. R. Getty	R. G. Steele	F. W. McDougall	Asst. Deputy Minister
1977	Dept. of Energy & Natural Resources	D. R. Getty	R. G. Steele	F. W. McDougall	Asst. Deputy Minister
1978	Dept. of Energy & Natural Resources	D. R. Getty	R. G. Steele	F. W. McDougall	Asst. Deputy Minister
1979	Dept. of Energy & Natural Resources	M. Leitch	F. W. McDougall	J. A. Brennan	Asst. Deputy Minister
1980	Dept. of Energy & Natural Resources	M. Leitch	F. W. McDougall	J. A. Brennan	Asst. Deputy Minister

Head of Forest Protection - Alberta Forest Service

Jack L. Janssen	April 1953 - January 1954
Ted R. Hammer	January 1954 - March 1964
Stanley R. Hughes	April 1964 - April 1974
Hank M. Ryhanen	May 1974 - November 1980
Clifford B. Smith	January 1981 - Present

Note: C. Frank Platt was Assistant Head of Forest Protection
July 1953 - December 1974.

10.1.2 Extracts from 1872 Public Lands Act

Extract from

"An Act Respecting the Public Lands of the Dominion"

Cap. 23 assented to 14th April, 1872

Preamble.

> "WHEREAS it is expedient with a view to the proper and efficient administration and management of certain of the public lands of the Dominion that the same should be regulated by statute: Therefore Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:
>
> This Act shall apply exclusively to the Lands included in Manitoba and the North West Territories, which lands shall be styled and known as Dominion Lands; and this Act shall be known and may be cited as the "Dominion Lands Act", and the following terms and expressions therein shall be held to have the meaning hereinafter assigned them, unless such meaning be repugnant to the subject or inconsistent with the context; that is to say:
>
> ....The term Crown Timber Agent means the local officer appointed to collect dues and to perform such other duties as may be assigned to such officer, in respect to the timber on Dominion lands."

Timber and Timber Lands

Timber in townships surveyed for settlement

> "46. And whereas it is expedient that the timber forming Islands or Belts in townships thrown open for settlement, should be so disposed of as to benefit the greatest possible number of settlers and to prevent petty monopoly, it is therefore enacted as follows:
>
> In the subdivision of townships which may consist partly of prairie and partly of timber land, such of the sections or subdivisions of sections containing Islands, Belts, or other tracts of timber, shall be subdivided into such number of wood lots of not less than ten, and not more than twenty acres in each lot, as will afford, so far as the extent of wood land in the township may permit, one such wood lot to each quarter section prairie farm in such township."

Other Timber and Timber Limits

Reservation of timber lands

> "47. Any tract of land covered by forest timber may be set apart as timber lands, and reserved from sale and settlement."

> "50. The right of cutting timber on such limits shall be put up at a bonus per square mile, varying according to the situation and value of the limit, and sold to the highest bidder by competition, either by tender or at public auction."

> "51. The purchaser shall receive a lease granting the right of cutting timber on the land for twenty-one years, and containing the following conditions, with such others as shall have been embodied in the notice of sale....."

> ".....To prevent all unnecessary destruction of growing timber on the part of his men, and to exercise strict and constant supervision to prevent the origin and spread of fires."

10.1.3 Extracts from "Pioneer Days in Bardo, Alberta"

Extracts from

Chapter IX "Prairie Fires"

in "Pioneer Days in Bardo Alberta"

by Regna Steen and Magda Hendrickson, 1944,

Pioneer Days in Bardo
Alberta

INCLUDING SKETCHES OF EARLY SURROUNDING SETTLEMENTS

By

RAGNA STEEN and MAGDA HENDRICKSON

Introduction by

N. N. RONNING

Published by
THE HISTORICAL SOCIETY OF BEAVER HILLS LAKE,
Tofield, Alberta

1944

CHAPTER IX

Prairie Fires

Prairie fires often ravaged the North-West Territories. The Blackfeet Indians who had roamed over these plains before the white man came, received their name through the fact that their mocassins were usually black with prairie-fire soot. These fires had evidently missed the Beaver Hills for many years since the settlers commonly found spruce trees measuring up to three feet in diameter.

During the spring and early summer of 1895 there had been a heavy growth of vegetation. Since there was no rain in the latter part of the season, creeks and sloughs were dry, making conditions ideal for great forest and prairie fires.

The whole Bardo community had put up their winter's supply of hay in the big sloughs east of the Lerbekmo farm. It had been a busy season, with logging, building and breaking of new land. There had been no time for ploughing fire guards around their haystacks.

On the morning of October first, the settlers were about their usual work when some of the men noticed a cloud in the south which resembled smoke. Since there was a breeze from the south they began worrying about their haystacks and decided to send word to all the neighbors: "Better take horses and plows immediately and make fireguards."

By the time the message had been sent around the smoke was definitely approaching. About nine o'clock in the morning the men started out. They planned on plowing furrows and burning between them to make a fire guard large enough to protect their hay and to keep the fire from coming through the settlement.

The women and children at home did not worry since they were confident that the men would be able to stop the fire.

Keeping an anxious eye on the thickening smoke to the south, the men hurriedly broke several long furrows some distance apart. The fire was nearing fast, and flames were now visible. A dull roar broke the stillness of the morning. Could they make it? They were just about to start the back-fire when they realized that the prairie fire was so large and was being fanned by such a strong wind that it would be impossible for them to stop it. Thinking of the safety of their families, they abandoned the haystacks and started for their homes with the flames now only a short distance behind them. The fire, travelling at high speed, caught the men who were riding as fast as their horses could go. The thick smoke and the crackle and roar of the flames made the horses unmanageable. In order to save both themselves and the horses, they jumped off and hurriedly blindfolded the horses—then headed them straight into the oncoming fire. They rode through the fire unharmed except for the singeing of the men's whiskers and the scorching of the horses' tails. As soon as the horses were quieted and the men able to see, they turned again and following the fire rode at top speed for their homes, not knowing in what condition they would find things.

Mrs. John Lerbekmo who had just arrived from Norway a few weeks before, was alone at home with the children. No men had come back. She had watched the approaching fire with much dread. When it came close to the house Mrs. Lerbekmo was distracted. The children, frantic with fear, cried, "Let's go up on the roof." Peter did climb upon the roof, but the mother finally persuaded him to come down. The fire swept on with terrific speed. The green grove by the house saved the buildings. When Lars Johnson and Carl Lerbekmo came the smoke was still very dense. They helped carry out the furniture and clothes and hurriedly piled them on a spot that had already been burnt. Then Lars galloped on. Mrs. Lerbekmo tried to find a place where they could get some relief from the smoke.

When John Lerbekmo came home he found no one in the house. He searched the grove for his family, calling to them through the smoke. Finally he heard an answer and found them safe and sound amongst the trees, a short distance from the house. It was a happy reunion for them all. They found their clothes damaged by hot coals still smouldering on the ground. Quoting Mary Boness: "When the fire had passed, although the house was saved, we found to our sorrow that our very best tailor-made dresses and coats from Norway, had big holes burnt in them, and we all cried." Later their father told them that to save himself from being burned, he had thrown himself face downward into a furrow. He was singed, but unhurt. Their buildings, household goods and provisions were saved, and they were thankful, although they had to wear patched clothing for many years.

Lars Johnson found his new house, which had just been finished. burned to the ground, Some furniture and his winter's supply of potatoes were destroyed. Their stove lay ruined in the cellar. The family had not yet moved in. Mrs. J. Johnson and Mrs. Lars Johnson and their children were still living at Johan Arndt's house.

Halvor Haugen had a strip of breaking between his house and the one occupied by the Johnsons. Here Ingrid and Maria Johnson and Gjertrud Haugen had taken refuge with their children when they saw the prairie fire heading directly towards them. Nevertheless, they exerted themselves to save as much as possible. The cows and horses were herded together on the breaking. They carried their furniture and clothes to the same place. They brought the children out, carrying Mrs. Lars Johnson's baby in the wooden butter-tray and found safety on the breaking while the fire swept past. The smoke was so dense that they had to lie face downward on the ground to keep from smothering. After the fire had gone on, the baby, who had been cozily covered down in the butter bowl, was as happy as ever.

Neither the Haugen's buildings nor the house the Johnson's occupied was destroyed, which might seem pure luck.

But to the mothers it meant that their Heavenly Father had protected them.

In a Norse historical magazine there is a description of the fire written by Nels Jevning, which, translated reads thus: "The year after we came to Canada, our settlement was almost destroyed by a prairie fire which travelled so rapidly that one could not ride away from it on the speediest horse. We worked desperately to protect our property. The smoke was so dense that the sun was entirely darkened. The flames made a noise like thunder. This may sound unbelievable to those who have not had such an experience, but it is all true nevertheless."

Nels Jevning and his fourteen-year old son, Andrew, were at home. When they realized that the fire was really serious they hitched together an old horse and a young riding horse. With this team they plowed some furrows in a small field south of the house. Young Andrew and his sister Maggie then rushed the team over to their brother Peter's place and attempted to plow some furrows there. But the ground was too hard and the plow scoured so heavily that the team balked. They had plowed only one short, crooked furrow when the fire came.

Ragna, who was then just a little girl, was sent posthaste to Pete Jevning's house to bring his wife and baby down to her father's place. She ran until she thought her lungs would burst. When she arrived, she found her sister-in-law almost in hysterics on the bed with the baby beside her. "Oh, Ragna! she cried, "We'll all burn up!" Ragna urged her to make haste and come with her, but she was panic-stricken. Finally she was persuaded to make the attempt, and snatching something to throw over the baby, they hurriedly left. The smoke almost blinded and choked them as they ran more than a quarter of a mile to her father's place. They met the team and plough on the way and reached Nels Jevning's house just before the fire.

When Pete Jevning arrived on the scene he found his father, the younger brother and three sisters furiously fighting the fire. The main fire had swept by the barn and haystack but side fires were continually starting. Dry spruce chips around the newly-built house were burning. There was danger of fire in the grove by the house. They managed to save the buildings in spite of the desperate odds. It was four o'clock in the afternoon before a hungry, grimy, and besmoked family sat down to dinner.

Assisted by the old grandfather, Mrs. P. B. Anderson had taken action before her husband arrived, but their comparatively feeble efforts seemed to be useless. At all places, the battle continued long after the main fire had passed. Mrs. Anderson locked the children in the house so they wouldn't get lost in the smoke. Then she helped the men put out the fire which nearly wiped out everything. The three youngsters inside were terror-stricken each standing in a corner of the house. The youngest finally became hysterical. They were all crying when their mother came running in to see how they were faring.

As soon as Mr. Anderson dared to leave he jumped on a horse and made for the Finseth place which was unprotected, Mr. Finseth being in the States. On the way Mr. Anderson saw a wild cat by the creek but could not stop to shoot it then. He had a hard fight at Finseths; for a while it looked as if he might lose his own life trying to save the haystacks. When he got back home he took the gun and went to look for the lynx. North of his place he saw a horse standing so queerly still that he went to investigate. He found the horse with all his hair singed off and burned blind. It whinnied when he came close and then he knew the horse. It was Grandpa Anderson's driving pony. Mr. Anderson reluctantly raised the gun he had intended for other game and shot the poor animal, ending it's misery.

The settlers lost nearly all their hay, leaving them with no stock feed for the coming winter. Game and all wild life fared badly. Jevning's horses and Finseth's cattle were found on a piece of breaking out west after the fire was over. Anderson's and Jevning's cattle were found on a piece of breaking on Jevning's land. The animals seemed to know instinctively where they would be safe.

Between the settlement and the hills to the west the fire fortunately missed a strip of land. It became the pasture for the stock of the whole neighborhood until the snow came. The little boys who had to herd the cattle became so sore-footed from the burnt prairie that their mothers had to make some heavy coarse short-socks for them to wear. Shoes for such a job were out of the question. Ingrid Johnson also tells us that the little fellows trousers wore out so rapidly that she had to dye flour sacks to make a pair of pants for John. Not only little fellows exhibited flour sacks, for men's trousers too were frequently patched with flour sacks and it happened at times that "Strong Baker" was advertised on the rear.

The settlers wondered what to do for feed as winter was at hand. They went into the hills to look for hay and decided to cut the hay in the sloughs and hay bottoms which were not too far away.

At this time N. Jevning built himself a cabin about five miles west of the H. Owen homestead. Here he wintered his stock and kept this place as a ranch for many years.

The summer and fall of 1896 were also very dry. Fires started in mid-September. Since many of the men were away working, the few at home were kept busy fighting fire, both day and night for several weeks. It was impossible to put out the fires before the snow came as the sod was so dry that it would smoulder and burn indefinitely. Large holes were burnt in the ground. In some sloughs the soil was burned so badly that grass did not grow for many years.

Since pasture for the stock again had to be saved, the whole Bardo community and the settlers to the east turned out to plough a great fireguard around the whole settlement. To make such a fireguard, several furrows were ploughed close together. Then a strip of land was left untouched between that row and the next. Three such rows were made and the grass burnt off between the rows. This made a substantial fireguard. They started ploughing in the morning at Flaatens and continued for five miles coming to Lerbekmo's for dinner. From here they went south a short distance before turning west. Finally they turned north, arriving on the west side of the Brocke place. Because the sod and roots lay smouldering after the back-fire, there was continuous danger of fires starting whenever there was a wind. Peter Finseth and Andrew Jevning were kept on duty twenty-four hours a day, riding in shifts to watch the fireguard. Traces of this old fireguard can still be seen near the Bardo elevator.

In the eastern part of the settlement Mrs. P. Moen, Mrs. P. Flaaten and Mrs. A. Erickson had their hands full trying to protect their homes. They were constantly on the watch for fires. Mrs. Flaaten says she did not undress for three weeks. She would wrap herself in a quilt on the floor, and frequently jump up during the night and go out to watch for fires. One morning at four o'clock, she met Mrs. Erickson in the grove also anxiously watching. This morning they saw a fire coming and tried to start a back fire to meet it. But the grass was too damp with dew to burn well. Luckily for them the fire did not come their way.

At the time of the Big Prairie Fire these two women, all alone, fought like men to save their homes. They carried water from the well until it went dry. Then they used all of the milk that Mrs. Erickson had. Alma tells us that her mother, by herself, carried nearly all their furniture out on the potato patch. But after the fire was under control and the house was safe she had to get the neighbors to help her carry the furniture back. The feats of almost superhuman strength accomplished by such women, when the necessity arose, is almost unbelievable.

During this period of fire-fighting the food supplies of the settlement were exhausted and the flour bins became empty. As there were so few men at home, they did not dare leave in order to make a trip to Wetaskiwin for flour. Three weeks or more passed by before the men could leave for town to purchase flour. Once again the community enjoyed bread.

During the fall of 1897 fires again broke out. This time they were to the north-west where the Coombes, Hendersons, Owens and Mitchells lived. Because the land was more heavily wooded, it was harder to put out the fires. Mrs. Coombes remembers especially one night when the fires started up all around them and it looked as if everything on their place would burn. Her husband was away working, but Hugh Mitchell sent help to take Mrs. Coombes and the children away.

He was afraid that they might perish since they lived in the thick of the woods. When Guy Owens came tearing along with a hayrack half loaded with hay to rescue them, Mable, one of the children, would not leave until she had found her pet cat. They drove through burning woods as fast as the horses could go and came to Mitchell's place safely. However, strange as it may seem, the buildings did not burn. A light rain shower came in the evening and the fire died down.

Will Mitchell often tells about the time that they were far south of the settlement, helping to make a fireguard. A wind sprang up from the north-west and they saw a fire coming with it. Traveling as fast as they could, they tried to reach home but met the fire at Lars Johnson's homestead. There they fought this dreaded enemy of the settlers and with the help of a rain shower were able to stop it. The fire smouldered here until a large hole was burnt in the ground. It continued burning until the December snows. There were places on low lying ground where the fire burned in the sod and roots all winter.

Heavier rainfall during the following years lessened the danger of fire. The community experienced some smaller fires but never any like the one in the fall of 1895. That fire burned a territory all the way from Fort Pitt to north of Beaver Lake and up to the North Saskatchewan River; and two hundred and fifty miles from the south to Beaver Lake west.

Once, a few years later, Albin Anderson and Finn Brocke were out on John Anderson's west quarter in the hills getting a load of hay. Someone had been burning grass on the Mattatal place but the boys thought the fire had been put out. Suddenly they became aware that it was coming straight for them. They tried their very best to stop it but Albin got a severe nose-bleed and they had to give up. The fire raced on. At the Boness place the house was unprotected, since Jacob was driving his cattle to a safe place. The house, although right in the path of the fire, escaped. This fire raged on through the Earling district. It is told that a little girl was burned to death there.

Martin Eide says that this was the worst fire after he came to the settlement and occured in the spring of 1906. He continues: "It came with a strong north-west wind, swept over the southern part of the settlement, and passed the Grand Forks schoolhouse with a furious speed. Desperate battles were fought that night to turn it away from houses and homes. In places men hitched themselves to plows to make furrows in the path of the oncoming fire. They saved their property, and before morning the fire was miles past the settlement. That was the last very bad fire in this district. New roads and newly broken land prevented fires from running wild. Prairie fires disappeared. Now they are only a memory."

The following is a poem written by Bersvend Anderson about the "Big Fire":

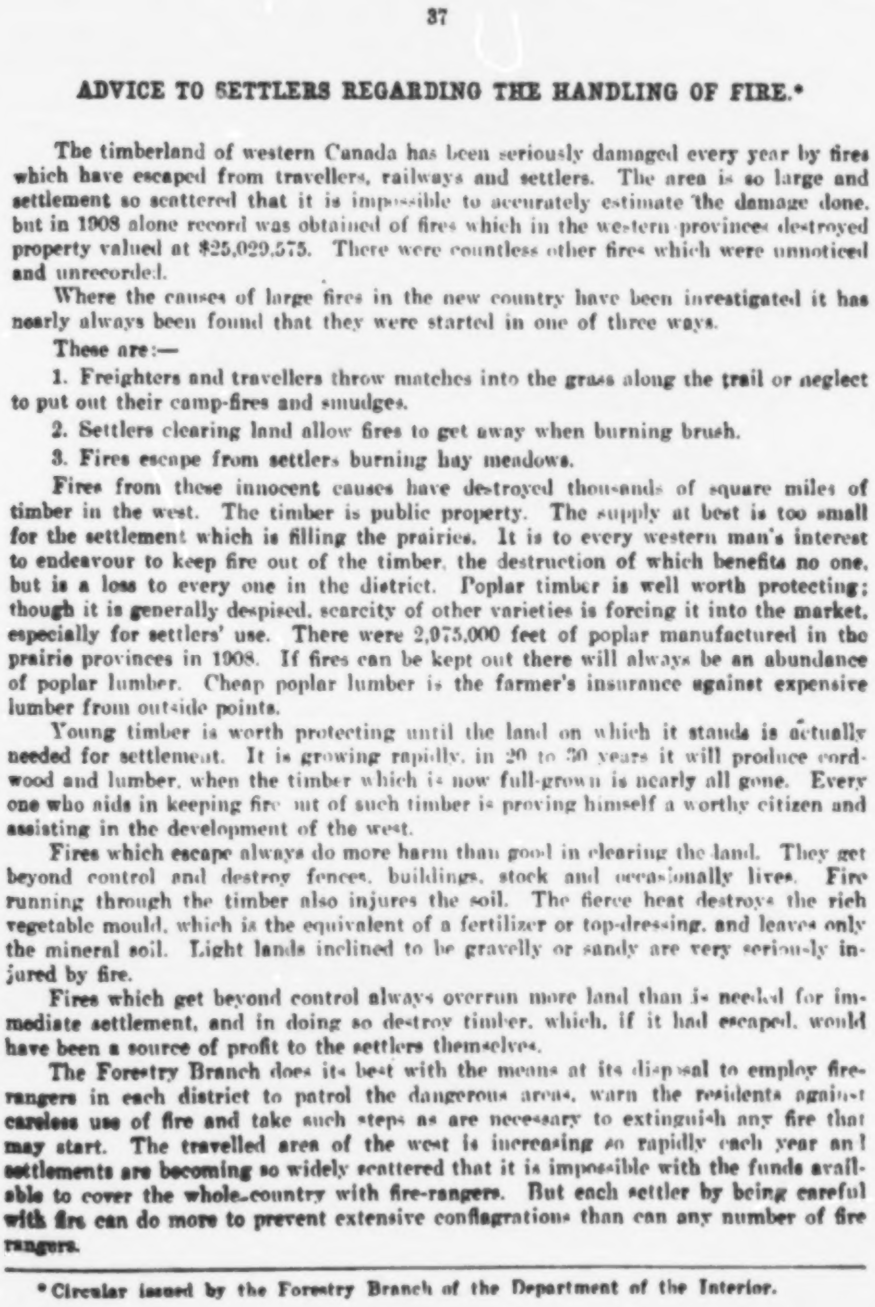
"Den første October i niti og fem
Bør vi ikke lettelig glemme
Da raset en prærie bran frygtelig slem
En saadan som ei lar sig tæmme.
Enhver faar nu tænke derom som han vil
Jeg tror dog at Herren var med i dets spill
Og talte med alvorets stemme.

Vor Gud han prædiker paa mange slags vis
Han mange slags midler kan bruge,
Snart medgang og glede men atter med ris,
Han vil os i støvet nedknuge.
At vi skal erkjende vi syndere er,
Og faa os omvendte — thi han har os kjar,
Og frelst ifra helvedes pine."

10.1.4 Advice to Settlers Regarding the Handling of Fires

Circular issued by the Forestry Branch

(reproduced from MacMillan and Gutches 1910.)



37

ADVICE TO SETTLERS REGARDING THE HANDLING OF FIRE.*

The timberland of western Canada has been seriously damaged every year by fires which have escaped from travellers, railways and settlers. The area is so large and settlement so scattered that it is impossible to accurately estimate the damage done, but in 1908 alone record was obtained of fires which in the western provinces destroyed property valued at $25,029,575. There were countless other fires which were unnoticed and unrecorded.

Where the causes of large fires in the new country have been investigated it has nearly always been found that they were started in one of three ways.

These are:—

1. Freighters and travellers throw matches into the grass along the trail or neglect to put out their camp-fires and smudges.

2. Settlers clearing land allow fires to get away when burning brush.

3. Fires escape from settlers burning hay meadows.

Fires from these innocent causes have destroyed thousands of square miles of timber in the west. The timber is public property. The supply at best is too small for the settlement which is filling the prairies. It is to every western man's interest to endeavour to keep fire out of the timber, the destruction of which benefits no one, but is a loss to every one in the district. Poplar timber is well worth protecting; though it is generally despised, scarcity of other varieties is forcing it into the market, especially for settlers' use. There were 2,075,000 feet of poplar manufactured in the prairie provinces in 1908. If fires can be kept out there will always be an abundance of poplar lumber. Cheap poplar lumber is the farmer's insurance against expensive lumber from outside points.

Young timber is worth protecting until the land on which it stands is actually needed for settlement. It is growing rapidly, in 20 to 30 years it will produce cordwood and lumber, when the timber which is now full-grown is nearly all gone. Every one who aids in keeping fire out of such timber is proving himself a worthy citizen and assisting in the development of the west.

Fires which escape always do more harm than good in clearing the land. They get beyond control and destroy fences, buildings, stock and occasionally lives. Fire running through the timber also injures the soil. The fierce heat destroys the rich vegetable mould, which is the equivalent of a fertilizer or top-dressing, and leaves only the mineral soil. Light lands inclined to be gravelly or sandy are very seriously injured by fire.

Fires which get beyond control always overrun more land than is needed for immediate settlement, and in doing so destroy timber, which, if it had escaped, would have been a source of profit to the settlers themselves.

The Forestry Branch does its best with the means at its disposal to employ fire-rangers in each district to patrol the dangerous areas, warn the residents against careless use of fire and take such steps as are necessary to extinguish any fire that may start. The travelled area of the west is increasing so rapidly each year and settlements are becoming so widely scattered that it is impossible with the funds available to cover the whole country with fire-rangers. But each settler by being careful with fire can do more to prevent extensive conflagrations than can any number of fire rangers.

---

* Circular issued by the Forestry Branch of the Department of the Interior.

Do not Neglect these Precautions.

When on the trail be careful of camp fires and smudges. Do not build fires larger than necessary. Do not build them in leaves, rotten wood, dry grass or other places where they are likely to spread. Do not build them against large or hollow logs where it is difficult to tell when the fire is out. In windy or very dry weather, or in dangerous situations, camp-fires should be confined to holes or should be built on the mineral soil from which all vegetable matter has been cleared away. Do not leave the fire even for a short time without first thoroughly extinguishing it.

Read carefully the law regarding using fire in clearing, and obey it. The fire rangers are employed to see that it is obeyed and are instructed to arrest all offenders. It is the fire-ranger's duty to advise and assist the settlers of his district in the setting out of fire for clearings. If there is a fire-ranger in your district see him before you set out fire.

Take every precaution to confine your fire to a small area and to your own land. Do not burn more brush at one time than you can constantly watch. Pile the brush so that fire cannot escape from it to neighbouring prairie, brush or woods. If possible surround by ploughed or well-cleared fire breaks. Do not burn it when there is a strong wind, nor when everything is dry and inflammable. A dull, quiet day after a rain in the spring or late fall is the best time. While a fire is burning watch it constantly and have water and tools near so that you can check it if necessary.

Do not burn hay meadows when everything is dry and the flames spread rapidly to the surrounding prairie or woods. Burn them when the woods are wet and on a dull day when there is only a slight breeze and burn them against the wind. The flames then can be readily checked and beaten out with brush if they threaten to spread beyond control. Do not burn a hay meadow without help near; watch the fire until it is extinguished.

General Instruction for Fighting Fires.

The tools necessary for fighting fire are sharp axes, round-pointed shovels, grubbing hoes or mattocks, buckets and blankets or sacking. If the fire is of serious proportions the local fire ranger should be immediately notified.

The best time to fight a fire is at night or in the early morning, as fires always die down during the night. If a fire covers an acre or more, especially if there be enough timber to make it very hot, it is frequently the best plan to do all possible to hold it in check during the day, gather as much help as is available and make a concentrated effort to put it out at night.

Fires under different circumstances vary a great deal, but there are a few general principles of fire-fighting which always hold.

Fires in a peaty soil cannot be absolutely extinguished, but can be checked by trenching. A trench about two feet wide, dug completely around the burning soil and deep enough to strike the permanent water-level, will keep the fire from spreading.

Fires running along the ground in the herbage may be beaten out with wet branches or sacking. Do not throw water by the pailful, except on burning logs or timber. It is a waste of water. Sprinkle or wet a wisp of branches; it is much more effective. Ground fires may also be checked by shovelling earth or sand on them.

Fire travels slowly in damp, heavy timber and a few men can check it by trenching, if they cannot put it out.

Fires in open dry woods, such as jackpine or spruce, can be checked from a trench or a natural break such as a stream, trail or open prairie.

Fire rushes uphill, pauses at the crest and travels more slowly down, so the best location for a fire-break is at the top or bottom of a slope.

When making a fire-break clear the ground of all materials in which fire might run and throw everything to the side next the fire so that there will be nothing to hold sparks that may leap across. A strip a few feet wide cleared to the mineral earth will usually check a fire. A fire-break should be patrolled until the fire is out.

10.1.5 Extract from an article in the Saturday Evening Post (ca. 1910)

Extract of an Article in the *Saturday Evening Post*

Quoted by R. H. Campbell, Superintendent of Forestry (Canada 1911a)

> "It has always been difficult to understand the difference in mental attitude toward the restraints of the law that exists between the American and the man who lives just north of him, across the Canadian line. In that country it is not considered a hardship to pay either reverence to nature or a tribute to those in whose charge lies the protection of nature and natural resources. A thousand miles north of the British line one had seen a fire guardian, the only officer of his kind in a section of a country hundreds of miles in extent. A splendid, quiet, self-respecting chap this man was too; one whose word was law and accepted as such unhesitatingly by red and white. Part of this man's duty was the posting of fire notices, each of which had a good, stiff penalty attached, in all the places where human beings, red or white, were apt to see them - steamer landings, fur posts, traders' stores. Nor did this man dread the red men so much as he did the newcomers of the white race, always more careless about fires than were the aboriginese."
>
> "One day during a steamer voyage this fire guardian saw smoke on the horizon far inland from the river on which we were travelling. He stopped the boat at once, got his pack together and went ashore. As he figured it out, this fire was forty miles away, probably at the edge of a certain large prairie surrounded by heavy woods. He would reach it in the afternoon of the second day on foot. He would carry most of his camp kit on his back until that night; then would cache some of it, and would leave yet more of it midday of the next day, cached against his return to the river, where he could get supplies or find the trail in and out of the country. He did not know who had started the fire or what shape the fire itself would have by the time he got to it. All alone, a sturdy and self-reliant figure - representing the law, representing civilization even in the wilderness, representing a decent regard of organized society for the organized society that is to follow us - he set out on foot for his wilderness journey across an untracked country. In all of one's experience with outdoor men, rarely has one met a better, simpler and nobler figure than this one."

10.1.6 Recommendations of the CIF Fire Brief - 1954

Recommendations of the Rocky Mountain Section

Canadian Institute of Forestry

Fire Brief - 1954

RECOMMENDATIONS

"Under the most favourable circumstances, it may take a decade to bring the practice of fire prevention and fire suppression in Alberta to the desired standard. In fact it would be most unwise to push forward so fast as to preclude the opportunity for careful planning.

It should not be supposed that it is either possible or desirable to prevent all forest fires. The cost of such a policy would be out of all proportion to the benefits derived. But is is quite possible to calculate the extent to which forest fires may be "allowed" so that the best interests of the taxpayers are met by maintaining the lowest total cost when the expense of providing protection and economic loss from fire damage are both considered. This "allowable" burn should be the objective of the people of Alberta. Any other aim is to their detriment.

As a means of striving toward this goal, the Rocky Mountain Section of the Canadian Institute of Forestry recommends that the following steps be taken.

1. That, because of the large preponderance of avoidable man-made fires, funds should be provided for an enlarged and co-ordinated program of public relations.

2. That greater attention be paid to the issuance of slash burning permits in organised municipalities and improvement districts, and that facilities be provided for a better inspection of all brush burning under permit.

3. That stiffer minimum penalties be provided for certain offences under the Forests Act.

4. That some control of travel in the northern forests similar to that at present in force in the Forest Reserve be instituted.

10.1.7 Trail Standards

From: Report of District Inspector of Forest Reserves for Alberta

Calgary, March 31, 1913. (Canada 1914)

The trails constructed were of two types, standard and secondary. Standard trails are intended to form the main avenues of communication within the forest reserve, and are built with the idea of making such communication as rapid and easy as possible. You will understand that practically the entire Rocky Mountains are accessible to horses by means of open land along the streams, old Indian trails or through the timber where it is not obstructed by excessive wind-falls. The rate of progress, however, along such routes of travel is exceedingly slow. The packers and other travellers in the mountains ordinarily consider from twelve to fiteen miles as a day's trip for pack and saddle horses, and their custom is to travel about six hours, making two miles or two and a half miles an hour and then stop for the day. Feed is reasonably abundant, so that it is not generally necessary to give much consideration to this point. Such slow progress, however, is not well adapted to the exigencies of fire protection. To reach a fire with a reasonable degree of promptness we should be able to travel for two or three days at the rate of twenty-five to thirty miles per day. In order to do this the main routes of travel must consist of trails that are a very great improvement over any of those existing in the mountains prior to the creation of the forest reserve. The standard trils are built according to the following specifications: All brush must be cut from six to ten feet wide, the widest cutting being in reproduction about ten to twenty feet high and the narrowest being in heavy green timber; all overhead branches must be cleared out so that they will not interfere with men on horseback; the trails are to be as straight and direct as possible between the two termini, but must be built on dry ground, avoiding muskegs, except where this is impossible. The grade is not to exceed 10 per cent, except for short pitches which will not be more than 100 feet long, not over fifteen per cent in gradient and should not occur more often than once in two miles; the trail is to have a graded tread throughout its length, this tread varying in width from sixteen inches on comparatively level land, to two feet on the steeper hillsides. On hillsides the tread is to be on the lower side of the cleared line, and all soil and rock from the grading is to be thrown in the form of a ridge on the outside edge. The tread at switch-back turns must be made on a grade of not to exceed three per cent and must be three times the width of the ordinary tread for a distance of eight feet on each side of the point of the turn. In descending steep slopes one or two long grades are to be preferred to a number of short switch-backs. Wherever necessary in crossing muskegs and swamps corduroy should be placed, laid at right angles to the trail. The material forming the corduroy must be at least six feet long and three inches in diameter at the small end. Wherever possible, larger material should be used up to eight feet long and six inches in diameter at the small end. All corduroy should be laid on not less than three sills and should have side logs laid on top of the corduroy which should not be less than six inches in diameter at the small end. Where possible some of the corduroy sticks should be spiked to the sills. All small streams up to 25-foot spans should be crossed by bridges or culverts. Bridges are to consist of stringers running lengthwise of the trail with not less than eight-foot poles laid across the stringers. These poles must be not less than four inches in diameter at the small end and should be spiked to the stringers and held down by guard-rails laid along the side of the bridge, which guard-rails shall be not less than six inches in diameter at the small end. In crossing streams by fords care must be taken to secure a good solid gravel bottom, free from mud and quicksand. The cost of trails built according to these specificiations will run from $25 to $60 per mile, but they will easily double or triple the distance that can be made through the mountains in a day.

Secondary trails will form a means of communication within the primary system of standard trails. Long journeys of more than a day would not ordinarily be necessary on secondary trails and the same standard of construction will not be needed. The total mileage of secondary trails will be many times greater than of standard trails, but the cost will ordinarily be very much less. The construction of secondary trails will in many cases consist of clearing out, straightening and widening the existing Indian and prospectors' trails, eliminating the worst grades and corduroying some of the worst muskegs. Secondary trails will not in any case be cut more than six feet wide, will not have a graded tread except on the steeper hillsides, where a tread not to exceed eighteen inches in width shall be made. The grades of such trails may run up to 20 per cent for long slopes and 35 per cent for short pitches. Corduroy on secondary trails may be made by laying long poles lengthwise of the trail to form a tread about four feet wide. Bridges, however, must be constructed similar to those provided for standard trails, but only the worst of the small

In the reorganization there will be six Forest Divisions. Each Division will have a Forest Superintendent, an Assistant Forest Superintendent, a Forest Clerk, a Stenographer and a Clerk-Radio Operator. The six Divisions have been approved. The new positions have been set up and are now in the process of being filled. The building needs, office equipment and mechanical requirements of each Superintendent's headquarters have been planned and are being acquired this year where possible.

In the reorganization a plan of essential fire fighting equipment has been made and it is expected that much of the material will be supplied this year. This will provide a basic unit of equipment in every Ranger's district with additional supplies held at the Superintendent's headquarters and other strategic points.

A plan of lookout towers has been made showing the additional towers required to give adequate coverage. This programme has been only partly approved as additional studies are being made. Seven towers are being built this year.

A reorganization of the Ranger Districts has been made but has not yet been approved. It is considered that this phase of the programme can be left until next year. The Superintendents will then have had time to become more familiar with their new Divisions and can make more studied recommendations of the needs of the Divisions.

Forest cover maps have now been obtained for most of the forested area. These are being studied and a Forest Management programme is being organized. In most cases timber operators are cutting to a diameter limit in stands which are mature or over-mature. The diameter limit is set with the aim of providing for a second crop in the operating area and at the same time furnishing seed and cover for possible reproduction.

In closing may I say that the department appreciates the good wishes expressed in your communication and the interest and co-operation shown by the Institute in matters relating to the administration of our forest resources. We are always willing to listen to informed representations and hope that we may receive any further ideas and suggestions of your organization in line with the reorganization plans detailed in this letter"

(Sgd.) Ivan Casey,
Minister.

10.1.9 Alberta Fire Statistics 1918-1978 (Stocks and Barney 1981)

10.2 B. EARLY FIRE ORDINANCES

10.2.1 Fire Ordinance 1832 - Council of Assiniboia

Proceedings of a Council held at Fort Garry

on Friday, the 4th day of May, 1832

Council of Assiniboia

"The great injury done to the Woods of the Settlement by fire and the serious danger and loss occasioned annually by that devouring element, arising from the wilfulness of some ill-disposed persons, and the negligence of others, render it absolutely necessary, for the protection of lives and property, that salutary Regulation should be formed with a view to check this evil, and that severe pains and penalties should be inflicted on all persons who may violate such Regulation. It is, therefore:

"Resolved 1st. That in all cases where it can be proved that the proprietor or occupant of Land lights a fire, between the 1st of March and the 1st of December, for any purpose whatsoever, at a distance exceeding fifty yards from his house even upon his own lands, he be fined in the sum of ten pounds, which will be levied forthwith by the sale of the partie's effects if necessary, one half of which fine shall be paid over to the informant and the other half retained in the hands of the Council, as a fund to meet such objects as they may hereafter be desirous of carrying into effect connected with the welfare and prosperity of the Settlement."

"Resolved 2nd. That, in all cases where it can be proved that any person lights a fire between the 1st of March and the 1st of December, either in the woods or plains beyond the boundary of his own property or farm, within 10 miles of the banks of the river on either side whether it be productive of any injury or not, he be fined in the sum of ten pounds, to be levied as stated in the foregoing Resolution and to be disposed of in like manner, except in cases where such fires may have been lighted through absolute necessity, of which the Council alone (shall) be competent Judges and, if the party so transgressing be destitute of means to pay the fine, he be banished from the Settlement and subjected to hard labour, and the produce thereof be applied to the liquidation of the fine."

10.2.2 Fire Ordinance 1835 - Council of Assiniboia

Proceedings of a Council held at Fort Garry
on Thursday, the 30th day of April, 1835
Council of Assiniboia

Present:

George Simpson, Governor of Rupert's Land, President, and 11 Councillors.

"In order to guard against the destruction of woods, hay, etc., by neglected fires; it is

Resolved 1st. That all persons be strictly prohibited from lighting fires for any purpose whatsoever beyond their enclosed ground under cultivation, unless the assistance of ten neighbours at least be obtained to extinguish the said fire, under a penalty of 20/, to be levied on his goods, beside being answerable for all damages that may arise from fires so lighted." (Oliver 1914)

10.2.3 Fire Ordinance 1835 - Council of Assiniboia

Minutes of a Council held at Fort Garry

on the 25th day of June, 1841

Council of Assiniboia

Present:

Sir George Simpson, Governor-In-Chief and President, and 14 Councillors.

The following rules and regulations were passed unanimously:

General Provisions.

1. The following regulations shall apply to the whole of the District of Assiniboia, extending, in all directions, fifty miles from the forks of the Red River and the Assiniboine, provided, however, that the Settlement, where it is expressly mentioned, shall not extend in breadth more than four miles from the nearest part of either river, or in length more than four miles from the highest or the lowest permanent dwelling.
2. Wherever the contrary is not expressed or implied, fines and forteitures shall be equally divided between the prosecutor and the public fund.
3. In all cases, the prosecutor may be admitted as a witness.
4. Wherever the contrary is not expressed or implied, any injured party shall be entitled to sue in the ordinary way for damages over and above the specified fine.
5. Wherever the contrary is not required by the sense, any gender shall include all genders, and either number shall include both numbers, nor in any respect shall the natural and obvious meaning be set aside either to punish or to screen offenders.
6. Whoever may have assisted, or seconded, or advised, or ordered, or authorized the committing of any offence, shall be held to have committed it himself.
7. If any hay-stack, of which every part shall be more than a hundred yards distant from the nearest point of its owner's house or adjacent out-houses, shall be destroyed or damaged by any fire whatever, the said owner shall not recover any compensation for the destruction or the damages, unless his said hay-stack shall have been surrounded at a distance of at least thirty yards by a plowed belt four yards wide, -

provided, however, that the injured Plaintiff shall not pay the costs of suit of a guilty defendant, but may, at the discretion of the competent Court recover his own costs of suit from the same.

8. If, between thirty-first May and first November, any person shall kindle or spread a fire, intended to consume growing or standing fuel of any kind whatever, he shall be fined ten pounds - provided, however, that, after verdict but before judgement, the president of the Court may remit the whole fine, as well the prosecutor's half as the other, merely by certifying in writing, on the back of the Clerk's notes of the evidence, that "The offender is morally guiltless, having committed the offence through a pressing necessity, which had not in the least degree arisen from his own act or neglect, and having done all in his power to prevent the fire from spreading towards the property of others", and provided, also, that the owner of any hay-stack, surrounded according to the preceeding regulation, may burn all within the plowed belt, that may not exceed one foot in height, subject to the ensuing regulations.

9. If, between thirty-first May and first November, any fire in the open air, other than that prohibited in the foregoing regulations, be deserted by all who may have kindled or fed or used the same, or cannot be extinguished by such of them as may not have deserted it, every person, who may have so fed or kindled or used the same, shall be fined from five to fifty shillings." (Oliver 1914)

10.2.4 Draft Fire Ordinance 1851 - Council of Assiniboia

Draft of the Revised Code of Municipal Regulations

Prepared by the Law Amendment Committee

Council of Assiniboia

May 1851

General Provisions

I. All local enactments, where not expressly extended farther, shall apply only to that part of the District of Assiniboia which forms Red River Settlement and its environs.

II. Fines and forfeitures, when not otherwise appropriated, shall go to the public fund.

III. Every regulation shall be interpreted without regard to the distinctions of gender or number

IV. If any person, in any way, encourage any violation of any local enactment, he shall be held to be as guilty as the principal offender.

V. Unless a special regulation provide to the contrary, every wrong has its remedy under the general law of the country.

1. All local regulations, that were on record on 30th April 1851, are repealed.
2. If any hay-stack in the open plain shall be injured by a running fire, the owner shall not recover damages unless such hay-stack has been protected, at a distance of at least thirty yards, by a plowed belt of at least four feet wide.
3. If, between thirty first May and ——————————— (sic), any person shall kindle a fire intended to run, he shall be fined ten pounds, one half to go to the prosecutor, - Provided that the bench may remit the whole fine, if the defendant has both kindled the fire through necessity, and has done all in his power to prevent it from spreading.
4. If any fire in the open air, which is not intended to run, shall be left burning without due precautions, or be negligently allowed to spread, every person, who may have kindled or fed or used the same, shall be fined from five shillings to fifty shillings." (Oliver 1914)

10.2.5 Fire Ordinance 1852 - Council of Assiniboia

Law Passed by
the Governor-In-Council of Assiniboia
on 13th of July, 1852

General provisions

I. All local enactments, not expressly extended farther, shall apply only to that part of the district of Assiniboia which forms the Red River Settlement and its environs.

II. Fines and forfeitures, when not otherwise appropriated, shall go to the public fund.

III. Every regulation shall be interpreted without regard to the distinctions of gender or number.

IV. If a person, in any way, encourage any violation of any local enactment, he shall be held to be as guilty as the principal offender.

V. Unless a special regulation provide to the contrary, every wrong has its remedy under the general law of the country.

1. All local regulations, that were on record on 30th April, 1851, are repealed.

Fires

2. If any hay stack, in the open plains, be injured by a running fire, the owner shall not recover damages unless such hay stack has been protected, at a distance of at least thirty yards, by a plowed ring of at least four feet wide.

3. If between 31st May and 1st December, any person shall kindle a fire intended to run, he shall be fined Ten Pounds, one half to go to the prosecutor, - Provided, that the bench may remit the whole fine, if the defendant has both kindled the fire through necessity and done all in his power to prevent it from spreading.

4. If any fire in the open air, which is not intended to run, shall be left burning without due precautions, or be negligently allowed to spread, every person, who may have kindled or fed or used same, shall be fined from Five Shillings to Fifty Shillings. (Oliver 1915)

10.2.6 Fire Ordinance 1862 - Council of Assiniboia

Minutes of a Meeting
Of the Governor and Council of Assiniboia
held on the 8th and 11th day of April, 1862

Present:

William Mactavish, Governor of Assiniboia, President, and 9 Councillors.

Revised laws and regulations.

General Provisions.

1. All local enactments when not expressly extended farther shall apply only to the part of the District of Assiniboia which forms Red River Settlement and its environs.
2. Fines, and forfeitures when not otherwise appropriated shall go to the public fund.
3. Every resolution shall be interpreted without regard to the distinctions of gender or number.
4. If any person in any way encourage any violation of any local enactment, he shall be held to be a guilty as the principal offender.
5. Unless a special regulation provide to the contrary every wrong has its remedy under the general law of the Country.

Resolved 1st. All local regulations, that were on record on the 13th March, 1862, are repealed.

2nd. If any hay stack in the open plains shall be injured by a running fire, the owner shall not recover damages, unless such haystack has been protected at a distance of at least twenty yards by a plowed or burned ring of at least eight feet wide.

3rd. If between the 31st May and 1st December any person shall kindle a fire intended to run, he shall be fined Ten Pounds, one half to go to the prosecutor, and if any person without having previously obtained the presence and assistance of at least four men shall light a fire for the purpose of burning the rings round hay stacks as required by the preceding law, he shall be held to have incurred the penalty attached to this law. Provided that the Bench may remit the whole fine, if the defendant has both kindled the fire through necessity, and done all in his power to prevent it from spreading.

4th. If any fire in the open air, which is not intended to run, shall be left burning without due precautions or be negligently allowed to spread, every person who may have kindled or fed, or used the same shall be fined from Five Shillings to Fifty shillings." (Oliver 1914)

10.2.7 Prairie and Forest Fire Ordinance 1875 - Council of the N.W.T.

An Act for
the Prevention of Prairie and Forest Fires
in the North West Territories of the Dominion of Canada
Council of the North West Territories. Passed 1875

"Whereas it is necessary to take steps for the prevention of Prairie and Forest Fires within the North West Territories.

Her Majesty, by and with the advice and consent of the North West Council, enacts as follows:

1. Any person who shall kindle a fire with intent to let it run at large, shall, on conviction thereof, be fined in a sum not exceeding two hundred dollars, and in default of the payment thereof, shall be imprisoned for any term not exceeding twelve months.

2. Any person who shall kindle and leave a fire burning, without taking effectual means to prevent its spreading, shall on conviction thereof, be fined in a sum not exceeding one hundred dollars, and in default of the payment thereof, shall be imprisoned for a term not exceeding six months.

3. Any person who, between the 1st day of May and the 30th day of November in each year, by himself, his servants, or agents, or any one acting by or under his authority, shall, after cutting the trees of any land, road allowances, or railway, or telegraph line or route, or the lands attached thereto in the North West Territories, in the process of clearing the same of timber for any purpose whatsoever, burn, or set fire to the same for the purpose of disposing thereof, or making away therewith, or after cutting down any such trees, shall gather the same into log heaps for burning, and set fire thereto; or shall set fire to any such trees while lying on the ground after cutting or felling the same, or shall for any purpose whatever, set fire to any such tree while standing in the soil, shall, on conviction of any of the foregoing offences, be fined in a sum not exceeding two hundred dollars for each offence, and in default of the immediate payment thereof, shall be imprisoned in the common gaol for a term not exceeding twelve months.

4. In any prosecution under the provisions of this Act, whereby the conviction of the offender is secured, the informer shall be entitled to receive one half the amount of fine imposed.

5. None of the fines or penalities imposed by this Act, shall apply to any person, who, through necessity to save himself and his property from running fires, shall be compelled to kindle a fire and allow it to run.

6. Nothing in this Act shall bar any party or parties from recovering damages from the party or parties mentioned in the first, second and third clauses of this Act.

7. Prosecutions under this Act shall be summary, and may be brought by warrant before any Stipendary Magistrate or Justice of the Peace, having authority to act on such, within any portion of the Territories where the offence is committed.

8. This Act shall apply to any Indian who shall not be include or reside within those portons (sic) of the North West Territories which are comprehended within the limits of any of the Treaties made by Commissioners of the Privy Council of Canada with the Indians.

9. This Act is hereby declared to be of urgent importance".

Oliver (1915) stated that this legislation with respect to fires was not dissimilar to but was more comprehensive than that enacted by the Council of Assiniboia.

10.2.8 Prairie and Forest Fire Ordinance 1877 - Council of the N.W.T.

An Ordinance for

the Prevention of Prairie and Forest Fires

(Passed 22 March, 1877)

Ordinance of the Lieutenant-Governor and

Council of the North West Territories

"Be it enacted by the Lieutenant-Governor of the North West Territories, by and with the advice and consent of the Council thereof, as follows:

1. Any person who kindles or is party to kindling a fire in the open air in any part of the said Territories, except for actual camp purposes or to protect buildings, stacks or other like property in the danger of being destroyed by running fires, or for clearing lands in months of December, January, February, March or April, by burning log heaps sufficiently separated from surrounding brushwood or other inflammable material to prevent the fire from spreading, shall, on conviction thereof, pay a fine not exceeding one hundred dollars with costs of prosecution, and in default of payment by imprisonment for a term not exceeding six months.

2. An person who kindles or is a party to kindling a fire in the open air for any of the purposes allowed in the next preceding section, and who neglects taking effectual means to prevent such fire from running at large, or to extinguish it after such purpose has been served, shall, on conviction, be liable to a fine not exceeding fifty dollars, with costs of prosecution, and in default of payment to be imprisoned for a term not exceeding three months.

3. Nothing in this Ordinance shall bar or prevent the owner of private property from recovering damages from any offender against the first and second sections of this Ordinance.

4. Prosecutions under this Ordinance shall take place in a summary manner.

5. It shall be the duty of all police and other peace officers upon view of an infraction of any of the enactments of this Ordinance forthwith to arrest the offender by the authority of this Ordinance, and without further warrant bring him before a Judge, Stipendiary Magistrate, or Justice of the Peace, to be dealt with according to law.

6. In prosecutions upon information under this Ordinance whereby conviction is secured, and a fine paid or collected, the informer shall be entitled to receive one half of the said fine.

7. This Ordinance shall come into operation on the first day of July, in the year one thousand eight hundred and seventy-seven; and on and from the said first day of July, one thousand eight hundred and seventy-seven, the Act passed by late Council of the North West Territories, intituled "An Act for the Prevention of Prairie and Forest Fires in the North West Territories of the Dominion of Canada", shall have no force or effect within the limits of the North West Territories as now by law defined." (N.W.T. 1877b)

10.2.9 Prairie and Forest Fire Ordinance 1879 - Council of the N.W.T.

An Ordinance for

the Prevention of Prairie and Forest Fires

(Passed 26 September, 1879)

Ordinances of the North West Territories

Passed by the Lieutenant-General in Council

In the session began and holden at Battleford

28 August-27 September, 1879

Be it enacted by the Lieutenant-Governor of the North West Territories, in Council, as follows:

I. Any person who kindles or is party to kindling a fire in the open air in any part of the said Territories, except for camp or domestic purposes or to protect buildings, stacks, or other like property in danger of being destroyed by running fires, or for clearing lands in the months of December, January, February, March or April, by burning log heaps sufficiently separated from surrounding brushwood or other inflammable material to prevent the fire from spreading, shall on conviction thereof, pay a fine not exceeding one hundred dollars with costs of prosecution, and in default of payment be imprisoned for a term not exceeding three months.

II. An person who kindles or is a party to kindling a fire in the open air for any of the purposes allowed in the next preceding section, and who neglects taking effectual means, while such purpose is being served, or after it has been served, to prevent such fire from running at large, shall, on conviction, be liable to a fine not exceeding fifty dollars, with costs of prosecution; and in default of payment, to be imprisoned for a term not exceeding two months.

III. Nothing in this Ordinance shall bar or prevent the owner of private property from recovering damages from any offender against the first and second sections of this Ordinance.

IV. Prosecutions under this Ordinance shall take place in a summary manner.

V. It shall be the duty of all peace officers upon view of an infraction of any of the enactments of this Ordinance forthwith to arrest the offender and without warrant, bring him before a Stipendiary Magistrate or justice of the peace, to be dealt with according to law.

VI. In prosecutions upon information under this Ordinance whereby conviction is secured and a fine paid or collected, the informer shall be entitled to receive one-half of the said fine.

VII. Any laws heretofore in force in the North-west Territories for the Prevention of Prairie and Forest Fires are hereby repealed.

10.2.10 Prairie and Forest Fire Ordinance 1888 - N.W.T. Assembly

An Ordinance Respecting Prairie and Forest Fires

Chapter 20 - 1888

The Revised Ordinances of North West Territories 1888

The Lieutenant-Governor, by and with the advice and consent of the Legislative Assembly of the Territories, enacts as follows:

1. Any person, who, directly or indirectly, kindles, or in any way causes the kindling of, or places, or is a party to kindling or placing a fire in the open air in any part of the said Territories, except for camp or domestic purposes, or for clearing land in the months of December, January, February, or March, except as hereinafter provided, shall on conviction thereof, pay a fine not exceeding two hundred dollars, with costs of prosecution, and in default of payment be imprisoned for a term not exceeding six months.

   Provided always, that a person may at any time kindle a fire, if he has present, during the whole time of the burning, six persons with proper appliances for putting out fires, or without such assistance, inside a plowed break not less than ten feet wide: provided that North of Township 30, fires may be kindled for the purpose of clearing land during the month of April also.

2. Any person who kindles, or is a party to kindling a fire in the open air for any of the purposes allowed in the next preceding section, and allows such fire to escape, shall, on conviction, be liable to a fine not exceeding one hundred dollars, with costs of prosecution, and in default of payment, be imprisoned for a term not exceeding three months. Any person travelling by land or water, who shall light a fire on the prairie or elsewhere, and does not put it out before starting, shall be liable to all the penalties hereinafter imposed, and in the case of several offenders, such costs and fines shall be recoverable from each of them separately.

3. Nothing in this Ordinance shall bar or prevent the owner of private property from recovering damages from any offender against the first and second sections of this Ordinance.

4. The Lieutenant-Governor may appoint fire guardians, having the power of constables, to enforce the provision of this Ordinance, who, together with all Justices of the Peace, shall have the power to call out any male person within ten miles of a prairie fire, to proceed at once, and help to extinguish said fire, and any person refusing to do so shall be liable to a fine of ten dollars, with costs of prosecution. The Lieutenant-Governor-in-Council may, where it is deemed expedient, employ Counsel for the prosecution of offences under this Ordinance, whose services shall be paid for out of the General Revenue Fund of the Territories.

5. It shall be the duty of all Peace Officers, upon view of any infraction of any of the enactments of this Ordinance, forthwith to arrest the offender, and without warrant bring him before a Justice of the Peace to be dealt with according to Law.
6. Prosecutions under this Ordinance shall be in a summary manner.

10.2.11 Prairie and Forest Fire Ordinance 1892 - N.W.T. Assembly

An Ordinance to Amend
Chapter 20 of the Revised Ordinances, 1888,
Intituled "An Ordinance Respecting Prairie and Forest Fires"

No. 13 of 1891-92

Ordinances of the North West Territories

Passed in the first session of the

Second Legislative Assembly Begun and holden at Regina

10 December 1891 - 25 January 1892

(Assented to January 25th, 1892)

The Lieutenant-Governor, by and with the advice and consent of the Legislative Assembly of the Territories, enacts as follows:-

1. Section 1 of the said Ordinance is amended by striking out the word, "except", where it occurs the second time in said Section, and by inserting the word "or" instead.
2. Section 2 of the said Ordinance is hereby repealed and the following Section substituted:

   Any person who kindles, or is a party to kindling, a fire in the open air, as allowed in the next preceding clause, and allows such fire to escape, and any person travelling by land or water, who shall light a fire on the prairie or elsewhere, and does not put it out before starting, shall be liable to a fine not exceeding one hundred dollars, with costs of prosecution; and in default of payment be imprisoned for a term not exceeding three months; and in case of several offenders such costs and fines shall be recoverable from each of them separately.

3. Clause 4 of the said Ordinance is amended by striking out the word, "ten", where it occurs and inserting in lieu thereof the word, "five".

4. Clause 4 is further amended by striking out the words, "refusing to do so," where they occur in the sixth line, and by inserting the words, "who does not proceed at once," in lieu thereof.

10.2.12 Prairie and Forest Fire Ordinance 1893 - N.W.T. Assembly

An Ordinance to Amend
"The Prairie Fire Ordinance 1893"

No. 32 of 1894

Ordinances of the North West Territories

Passed in the fifth session of the

Second Legislative Assembly

Began and holden at Regina

August 2 - 7 September 1894

(Assented to 7th September 1894)

The Lieutenant-Governor, by and with the advice and consent of the Legislative Assembly of the Territories, enacts as follows:

1. Section 1 of "The Prairie Fire Ordinance, 1893", is hereby amended by adding the following subsection:

   (a) Any person, who kindles or is a party to kindling a fire in the open air for camp or domestic purposes and who leaves the same without having extinguished it, shall be liable to a fine not exceeding fifty dollars.

2. Section 2 of the said Ordinance is hereby repealed and the following substituted therefor:

   "2. No person shall kindle a fire for the purposes of guarding any property or for clearing land unless he has present during the whole time of the burning six persons with proper applicances for putting out fire, or unless the fire is kindled within a continuous guard which shall consist of ten feet of ploughing or at least twenty feet of water or a burnt strip of land of at least twenty feet in width. The guard may consist of all or any of the above mentioned breaks."

   (a) Any person neglecting to comply with the provisions of this Section shall be liable to a fine not exceeding fifty dollars.

3. Section 5 of the said Ordinance is hereby amended by inserting after the word "fire" where it occurs in the fifth line of the said Section the words "or within fifteen miles of a bush fire".

   (a) Provided always that the following persons shall be exempt from the provisions of this Section:

   Postmasters, Railway Station Agents, and members of the Medical Profession.

4. Prosecutions under this Ordinance may be in a summary manner.

10.2.13 Prairie and Forest Fire Ordinance 1898 - N.W.T. Assembly

An Ordinance for
the Prevention of Prairie and Forest Fires
No. 38 of 1898
Ordinances of the North West Territories
Passed in the Fourth Session of
The Third Legislative Assembly
Began and holden at Regina
16 August - 19 September, 1898

NO. 38 OF 1898.

AN ORDINANCE FOR THE PREVENTION OF PRAIRIE AND FOREST FIRES.

[*Assented to September*, 19, 1898.]

The Lieutenant Governor, by and with the advice and consent of the Legislative Assembly of the Territories, enacts as follows :

1. This Ordinance may be cited as "*The Prairie Fire Ordinance.*"

2. Any person who shall, either directly or indirectly, personally or through any servant, employee or agent—

(*a*) Kindle a fire and let it run at large on any land not his own property ;

(*b*) Permit any fire to pass from his own land ; or

(*c*) Allow any fire under his charge, custody or control or under the charge, custody or control of any servant, employee or agent to run at large,

shall be guilty of an offence and shall on summary conviction thereof be liable to a penalty of not less than $25 and not more than $200 and in addition to such penalty shall be liable to civil action for damages at the suit of any person whose property has been injured or destroyed by any such fire.

3. Any person who kindles or is a party to kindling a fire in the open air for camping or branding purposes and who leaves the same without having extinguished it, shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100.

4. No person shall directly or indirectly, personally or by any servant, agent or employee, kindle on any land a fire for the purpose of guarding property, burning stubble or brush or clearing land unless the land on which the fire was started was at the time it was started completely surrounded by a fireguard not less than twenty feet in width consisting of land covered with snow or water or so worn, graded, ploughed, burned over or covered with water as to be free of inflammable matter, and any person kindling a fire for such purpose shall during the whole period of its continuance cause it to be guarded by three adult persons provided with proper appliances for extinguishing prairie fire.

(2) Any person contravening this section shall be guilty of an offence and be liable on summary conviction therefor to a penalty not exceeding $100.

5. Nothing in this Ordinance shall prevent any railway company or its employees from burning over the land held by it under its right of way and the land adjoining the same to an extent not exceeding three hundred feet in width on each side of the centre line of the railway.

(2) Every person causing, commencing or in charge of such burning shall cause the same during the whole period of its continuance to be watched and guarded by at least four men provided with suitable appliances for extinguishing prairie fire and in default thereof shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100.

(3) This section shall not relieve any person from liability under this Ordinance if any fire so started shall escape or run at large.

6. Nothing herein contained shall prevent any person from kindling fire before the seventh day of May in any year for the purposes of clearing any area of land not exceeding three hundred and twenty acres, if such land is completely surrounded by a fire guard not less than ten feet in width consisting of land covered with snow or water or being so worn, graded, ploughed, burned over or covered with water as to be free of inflammable matter.

(2) Any person so kindling a fire shall cause it to be guarded during the whole period of its continuance by three adult persons provided with proper appliances for extinguishing prairie fire and should such fire be left without being so guarded or be allowed to escape such person shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100.

7. Nothing in this Ordinance contained shall prevent the overseer of any local improvement district from kindling a fire for the purpose of making a fire guard but the area which it is proposed to burn must be completely enclosed by a fireguard at least ten feet in width such as is described in section 6 hereof and such fire so kindled must during the whole period of its burning be guarded by such number of men provided with proper appliances for extinguishing prairie fire, not being less than four men, as will be reasonably sufficient to control such fire and if the precautions hereby required are not taken or if such fire should escape and run at large such overseer shall be deemed guilty of an offence and be liable on summary conviction thereof to a penalty not exceeding $100.

8. It shall not be necessary that any prosecutor or complainant shall in any information or complaint for an offence under this Ordinance negative any exemption, exception, proviso or condition herein contained or prove any such negative at the hearing or trial but the accused person my prove the affirmative thereof in his defence if he wishes to avail himself of it.

9. Nothing in this Ordinance shall bar or prevent any person from bringing any action against any person to which he may be otherwise entitled.

10. The Commissioner of Agriculture may appoint fire guardians having the powers of constables to enforce the provisions of this Ordinance, and all justices of the peace, all members of the North West Mounted Police force and all overseers of local improvement districts shall be *ex officio* fire guardians.

11. Any fire guardian may order any grown-up male person under sixty years of age (other than postmasters, railway station agents, members of the medical profession, telegraph operators, conductors, engineers, brakesmen, firemen or trainmen) residing or then being within ten miles of a prairie fire or within fifteen miles of a bush fire to proceed at once to the locality of such fire and assist in extinguishing it; and any person neglecting or refusing without lawful excuse to obey any such order shall be guilty of an offence and liable on summary conviction therefor to a penalty not exceeding $5.

12. The following provisions shall be observed in and about the management and operation of engines used for threshing:

1. The engine shall not be placed for the purpose of working so that any part thereof will be within thirty feet from any building or stack;

2. A metal pan of adequate size shall be placed under the engine as a receptacle for cinders and ashes, and such metal pan shall be kept filled with water;

3. Before the fires are lit in the furnace and during the whole time the engine is in operation the reservoir in the smoke stack shall be filled with water;

4. All cinders and ashes shall be thoroughly extinguished before the engine is removed from where it has been in operation;

5. A barrel of water and two buckets shall be provided and placed conveniently to any stacks or combustible material near the engine;

6. A spark arrester in good repair shall be used and shall not be opened while the engine is in operation;

7. Any person contravening or failing to comply with any of the provisions of this section shall be guilty of an offence and liable on summary conviction therefor to a penalty not exceeding $5.

13. Ordinance No. 24 of 1897 is hereby repealed.

10.2.14 Prairie and Forest Fire Ordinance 1899 - N.W.T. Assembly

An Ordinance for
the Prevention of Prairie and Forest Fires
Chapter 87. In force 1899
Consolidated Ordinances of
The North West Territories
Being a Consolidation of the Revised Ordinances
of the Territories 1888, with the subsequent
Public General Ordinances
of the Legislature of the North West Territories
In Force March 15, 1899

THE

CONSOLIDATED ORDINANCES

OF

THE NORTH-WEST TERRITORIES

1898

Being a Consolidation of The Revised Ordinances of the
Territories 1888, with the subsequent
Public General Ordinances

OF THE

Legislature of the North-West Territories

IN FORCE MARCH 15, 1899

REGINA:
Printed by JOHN ALEXANDER REID, Queen's Printer for the Territories.
1899.

CHAPTER 87.

An Ordinance for the Prevention of Prairie and Forest Fires.

THE Lieutenant Governor by and with the advice and consent of the Legislative Assembly of the Territories enacts as follows:

SHORT TITLE.

Short title

1. This Ordinance may be cited as "*The Prairie Fires Ordinance.*" No. 38 of 1898, s. 1.

PROVISIONS AGAINST KINDLING FIRES.

Causing prairie fires.

2. Any person who shall either directly or indirectly, personally or through any servant, employee or agent—

(*a*) Kindle a fire and let it run at large on any land not his own property;

(*b*) Permit any fire to pass from his own land; or

(*c*) Allow any fire under his charge, custody or control or under the charge, custody or control of any servant, employee or agent to run at large,

Penalty

shall be guilty of an offence and shall on summary conviction thereof be liable to a penalty of not less than $25 and not more than $200 and in addition to such penalty shall be liable to civil action for damages at the suit of any person whose property has been injured or destroyed by any such fire. No. 38 of 1898, s. 2.

CAMP OR BRANDING FIRES.

Camp or branding fires, extinguishment

3. Any person who kindles or is a party to kindling a fire in the open air for camping or branding purposes and who leaves the same without having extinguished it shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100. No. 38 of 1898, s. 3.

CLEARING LAND.

Fireguards in certain cases

4. No person shall directly or indirectly, personally or by any servant, agent or employee kindle on any land a fire for the purpose of guarding property, burning stubble or brush or clearing land unless the land on which the fire is started is at the time it is started, completely surrounded by a fireguard not less than twenty feet in width consisting of land covered with snow or water or so worn, graded, ploughed, burned over or covered with water as to be free of inflammable matter and any person kindling a fire for such purpose shall during the whole period of its continuance cause it to be guarded by three adult persons provided with proper appliances for extinguishing prairie fire.

(2) Any person contravening this section shall be guilty of an offence and be liable on summary conviction thereof to a penalty not exceeding $100. No. 38 of 1898, s. 4.

FIRES BY RAILWAY EMPLOYEES.

Railway companies and employees

5. Nothing in this Ordinance shall prevent any railway company or its employees from burning over the land held by it under its right of way and the land adjoining the same to an extent not exceeding three hundred feet in width on each side of the centre line of the railway.

(2) Every person causing, commencing or in charge of such burning shall cause the same during the whole period of its continuance to be watched and guarded by at least four men provided with suitable appliances for extinguishing prairie fire and in default thereof shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100.

(3) This section shall not relieve any person from liability under this Ordinance if any fire so started shall escape or run at large. No. 38 of 1898, s. 5.

SPRING BURNING.

Fires before 7th May

6. Nothing herein contained shall prevent any person from kindling fire before the 7th day of May in any year for the purpose of clearing any area of land not exceeding three hundred and twenty acres if such land is completely surrounded by a fire guard not less than ten feet in width consisting of land covered with snow or water or being so worn, graded, ploughed, burned over or covered with water as to be free from inflammable matter.

(2) Any person so kindling a fire shall cause it to be guarded during the whole period of its continuance by three adult persons provided with proper appliances for extinguishing prairie fire and should such fire be left without being so guarded or be allowed to escape such person shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100. No. 38 of 1898, s. 6.

FIRES BY LOCAL IMPROVEMENT OVERSEERS.

Overseers of local improvement districts, exception

7. Nothing in this Ordinance contained shall prevent the overseer of any local improvement district from kindling a fire for the purpose of making a fire guard but the area which it is proposed to burn must be completely inclosed by a fire guard at least ten feet in width such as is described in section 6 hereof and such fire so kindled must during the whole period of its burning be guarded by such number of men provided with proper appliances for extinguishing prairie fire, not being less than four men, as will be reasonably sufficient to control such fire and if the precautions hereby required are not taken or if such fire should escape and run at large such overseer shall be deemed guilty of an offence and be liable on summary conviction thereof to a penalty not exceeding $100. No. 38 of 1896, s. 7.

PROSECUTIONS.

Burden of proof Negativing exceptions

8. It shall not be necessary that any prosecutor or complainant shall in any information or complaint for an offence under this Ordinance negative any exemption, exception, proviso or condition herein contained or prove any such negative at the hearing or trial but the accused person may prove the affirmative thereof in his defence if he wishes to avail himself of it. No. 38 of 1898, s. 8.

RIGHTS OF ACTION PRESERVED.

Rights preserved

9. Nothing in this Ordinance shall bar or prevent any person from bringing any action against any person to which he may otherwise be entitled. No. 38 of 1898, s. 9.

FIRE GUARDIANS.

Fire guardians

10. The commissioner of agriculture may appoint fire guardians having the powers of constables to enforce the provisions of this Ordinance and all justices of the peace, all members of the North West Mounted Police force and all overseers of local improvement districts shall be *ex officio* fire guardians. No. 38 of 1898, s. 10.

Powers of fire guardians

11. Any fire guardian may order any grown-up male person under sixty years of age (other than postmasters, railway station agents, members of the medical profession, telegraph operators, conductors, engineers, brakesmen, firemen or trainmen) residing or then being within ten miles of a prairie fire or within fifteen miles of a bush fire to proceed at once to the locality of such fire and assist in extinguishing it, and any person neglecting or refusing without lawful excuse to obey any such order shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $5. No. 38 of 1898, s. 11.

THRESHING ENGINES.

Management and operation of threshing engines

12. The following provisions shall be observed in and about the management and operation of engines used for threshing:

1. The engine shall not be placed for the purpose of working so that any part thereof will be within thirty feet from any building or stack;

2. A metal pan of adequate size shall be placed under the engine as a receptacle for cinders and ashes and such metal pan shall be kept filled with water;

3. Before the fires are lit in the furnace and during the whole time the engine is in operation the reservoir in the smoke stack shall be filled with water;

4. All cinders and ashes shall be thoroughly extinguished before the engine is removed from where it has been in operation;

5. A barrel of water and two buckets shall be provided and placed conveniently to any stacks or combustible material near the engine;

6. A spark arrester in good repair shall be used and shall not be opened while the engine is in operation.

(2) Any person contravening or failing to comply with any of the provisions of this section shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $5. No. 38 of 1898, s. 12.

10.2.15 Prairie and Forest Fire Ordinance 1903 - N.W.T. Assembly

An Ordinance to Amend

Chapter 87 of the Consolidated Ordinances 1898

Intituled "An Ordinance for the Prevention of Prairie and Forest Fires"

Chapter 25, 1903

(Assented to June 19, 1903)

Ordinances of the North West Territories

Passed in the second session of the Fifth Legislative Assembly

Begun and holden at Regina

29 October - 21 November, 1903

The Lieutenant Governor by and with the advice and consent of the Legislative Assembly of the Territories enacts as follows:

Section 2 of the Prairie Fires Ordinance is hereby amended by adding thereto the following subsection: "(2) If a fire shall be caused by the escape of sparks or any other matter from any engine or other thing it shall be deemed to have been kindled by the person in charge or who should be in charge of such engine or other thing but such person or his employer shall not be liable to the penalties imposed by this section if in the case of stationary engines the precautions required by section 12 have been complied with and there has been no negligence in any other respect or in the case of railway or other locomotive engines such engine is equipped with a suitable smoke stack netting and ash pan netting in good repair and kept closed and in proper place and in the case of railway engines where the line of railway passes through prairie country there is maintained for a distance of at least three miles continuously in each direction from the point at which the fire starts on each side of such line of railway and not less than two hundred nor more than four hundred feet therefrom a good and sufficient fireguard of plowed land not less than sixteen feet in width kept free from weeds and other inflammable matter and the space between such fireguard and such line of railway is kept burned or otherwise freed from the danger of spreading fire and there has been no negligence in any other respect."

10.2.16 Prairie and Forest Fire Ordinance 1904 - N.W.T. Assembly

An Ordinance to Amend

Chapter 87 of the Consolidated Ordinances 1898

Intituled "An Ordinance for the Prevention of Prairie and Forest Fires"

Chapter 13, 1904

(Assented to October 8, 1904)

Ordinances of the North-west Territories

Passed in the Third Session of the Fifth Legislative Assembly

Begun and holden at Regina

22 September - 8 October, 1904

"The Lieutenant Governor by and with the advice and consent of the Legislative Assembly of the Territories enacts as follows:

Section 12 of the Prairie Fires Ordinance is hereby amended by inserting after the word "threshing" where it occurs therein the following words, "and other purposes but shall not apply

10.2.17 Prairie and Forest Fire Ordinance 1907 - NWT Assembly

An Ordinance for
the Prevention of Prairie and Forest Fires
Chapter 87
The Ordinances of the North-West Territories

THE

ORDINANCES

OF THE

NORTH-WEST TERRITORIES

Being an official consolidation of the Ordinances of the
North-West Territories in force on August 31st, 1905,
as the same appear in the Consolidation of 1898,
and the amendments thereto, together with
the Public General Ordinances, enacted by
the Legislature of the North-West
Territories, after the year 1898.

Compiled in the Department of the Attorney General of
the Province of Alberta at Edmonton.

EDMONTON:
JAS. E. RICHARDS, GOVERNMENT PRINTER
1907

CHAPTER 87.

An Ordinance for the Prevention of Prairie and Forest Fires.

THE Lieutenant Governor by and with the advice and consent of the Legislative Assembly of the Territories enacts as follows:

SHORT TITLE.

Short title

1. This Ordinance may be cited as *"The Prairie Fires Ordinance."* C.O., c. 87, s. 1.

PROVISIONS AGAINST KINDLING FIRES.

Causing prairie fires

2. Any person who shall either directly or indirectly, personally or through any servant, employee or agent—

(*a*) Kindle a fire and let it run at large on any land not his own property;

(*b*) Permit any fire to pass from his own land; or

(*c*) Allow any fire under his charge, custody or control or under the charge, custody or control of any servant, employee or agent to run at large,

Penalty

shall be guilty of an offence and shall on summary conviction thereof be liable to a penalty of not less than $25 and not more than $200 and in addition to such penalty shall be liable to civil action for damages at the suit of any person whose property has been injured or destroyed by any such fire.

[(2) If a fire shall be caused by the escape of sparks or any other matter from any engine or other thing it shall be deemed to have been kindled by the person in charge or who should be in charge of such engine or other thing but such person or his employer shall not be liable to the penalties imposed by this section if in the case of stationary engines the precautions required by section 12 have been complied with and there has been no negligence in any other respect or in the case of railway or other locomotive engines such engine is equipped with a suitable smoke stack netting and ash pan netting in good repair and kept closed and in proper place and in the case of railway engines where the line of railway passes through prairie country there is maintained for a distance of at least three miles continuously in each direction from the point at which the fire starts on each side of such line of railway and not less than two hundred per fireguard of ploughed land not less than sixteen feet in width kept free from weeds and other inflammable matter and the space between such fireguard and such line of railway is kept burned or otherwise freed from the danger of spreading fire and there has been no negligence in any other respect.

(8) For the purpose of ploughing any fire guard as in the next preceding subsection provided and of freeing from inflammable matter the land between such fire guard and the line of railway any railway company is hereby authorized to enter upon any uncultivated or unoccupied land without incurring any liability therefor provided that no unnecessary damage shall be done.] C.O., c. 87, s. 2; 1903, 1st session, c. 25, s. 1; 1903, 2nd session, c. 30, s. 1.

CAMP OR BRANDING FIRES.

3. Any person who kindles or is a party to kindling a fire in the open air for camping or branding purposes and who leaves the same without having extinguished it shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100. C.O., c. 87, s. 3.

Camp or branding fires extinguishment

CLEARING LAND.

4. No person shall directly or indirectly, personally or by any servant, agent or employee kindle on any land a fire for the purpose of guarding property, burning stubble or brush or clearing land unless the land on which the fire is started is at the time it is started, completely surrounded by a fire guard not less than twenty feet in width consisting of land covered with snow or water or so worn, graded, ploughed, burned over or covered with water as to be free of inflammable matter and any person kindling a fire for such purpose shall during the whole period of its continuance cause it to be guarded by three adult persons provided with proper appliances for extinguishing prairie fire.

Fireguards in certain cases

(2) Any person contravening this section shall be guilty of an offence and be liable on summary conviction thereof to a penalty not exceeding $100. C. O., c. 87, s. 4.

FIRES BY RAILWAY EMPLOYEES.

5. Nothing in this Ordinance shall prevent any railway company or its employees from burning over the land held by it under its right of way and the land adjoining the same to an extent not exceeding three hundred feet in width on each side of the centre line of the railway.

Railway companies and employees

(2) Every person causing, commencing or in charge of

men provided with suitable appliances for extinguishing prairie fire and in default thereof shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $100.

(3) This section shall not relieve any person from liability under this Ordinance if any fire so started shall escape or run at large. C. O., c. 87, s. 5.

SPRING BURNING.

Fires before 7th May

6. Nothing herein contained shall prevent any person from kindling fire before the 7th day of May in any year for the purpose of clearing any area of land not exceeding three hundred and twenty acres if such land is completely surrounded by a fire guard not less than ten feet in width consisting of land covered with snow or water or being so worn, graded, ploughed, burned over or covered with water as to be free from inflammable matter.

(2) Any person so kindling a fire shall cause it to be guarded during the whole period of its continuance by three adult persons provided with proper appliances for extinguishing prairie fire and should such fire be left without being so guarded or be allowed to escape such person shall be guilty of any offence and liable on summary conviction thereof to a penalty not exceeding $100. C. O., c. 87, s. 6.

FIRES BY LOCAL IMPROVEMENT OVERSEERS.

Overseers of local improvement districts, exceptions

7. Nothing in this Ordinance contained shall prevent the overseer of any local improvement district from kindling a fire for the purpose of making a fire guard but the area which it is proposed to burn must be completely inclosed by a fire guard at least ten feet in width such as is described in section 6 hereof and such fire so kindled must during the whole period of its burning be guarded by such number of men provided with proper appliances for extinguishing prairie fire, not being less than four men, as will be reasonably sufficient to control such fire and if the precautions hereby required are not taken or if such fire should escape and run at large such overseer shall be deemed guilty of an offence and be liable on summary conviction thereof to a penalty not exceeding $100. C. O., c. 87, s. 7.

PROSECUTIONS.

Burden of proof Negativing

8. It shall not be necessary that any prosecutor or complainant shall in any information or complaint for an offence at the hearing or trial but the accused person may prove the affirmative thereof in his defence if he wishes to avail himself of it. C. O., c. 87, s. 8.

RIGHTS OF ACTION PRESERVED.

9. Nothing in this Ordinance shall bar or prevent any person from bringing any action against any person to which he may otherwise be entitled. C. O., c. 87, s. 9. **Rights preserved**

FIRE GUARDIANS.

10. The commissioner of agriculture may appoint fire guardians having the powers of constables to enforce the provisions of this Ordinance and all justices of the peace, all members of the North-West Mounted Police force and all overseers of local improvement districts shall be *ex officio* fire guardians. C. O., c. 87, s. 10. **Fire guardians**

11. Any fire guardian may order any grown-up male person under sixty years of age (other than postmasters, railway station agents, members of the medical profession, telegraph operators, conductors, engineers, brakesmen, firemen or trainmen) residing or then being within ten miles of a prairie fire or within fifteen miles of a bush fire to proceed at once to the locality of such fire and assist in extinguishing it; and any person neglecting or refusing without lawful excuse to obey any such order shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $5. C. O., c. 87, s. 11. **Powers of fire guardians**

THRESHING ENGINES.

12. The following provisions shall be observed in and about the management and operation of engines used for threshing [and other purposes but shall not apply to railway locomotive engines or engines enclosed in a suitable building]: **Management and operation of threshing engines**

1. The engine shall not be placed for the purpose of working so that any part thereof will be within thirty feet from any building or stack;

2. A metal pan of adequate size shall be placed under the engine as a receptacle for cinders and ashes and such metal pan shall be kept filled with water;

3. Before the fires are lit in the furnace and during the whole time the engine is in operation the reservoir in the smoke stack shall be filled with water;

4. All cinders and ashes shall be thoroughly extinguished

5. A barrel of water and two buckets shall be provided and placed conveniently to any stacks or combustible material near the engine;

6. A spark arrester in good repair shall be used and shall not be opened while the engine is in operation.

(2) Any person contravening or failing to comply with any of the provisions of this section shall be guilty of an offence and liable on summary conviction thereof to a penalty not exceeding $5. C. O., c. 87, s. 12; 1904, c. 13, s. 1.

11. INDEX

A

- Act Respecting Forest Reserves and Parks (1911)
  - see Forest Reserves Act (1911)
- Act Respecting the Public Lands of the Dominion
  - see Dominion Lands Act (1872)
- Act Respecting the Sale and Management of Timber on Public Lands, 52
- Act to Establish a Commission for the Conservation of Natural Resources (1909), 154
- agriculture
  - see land clearing
- Air Board of Canada, 21, 209
- air patrols, 209;
  - see also aircraft
- air tankers, 286;
  - see also aircraft
- aircraft, 21, 28, 209-11, 244, 265-67, 269
- Alberta, 1, 9, 13, 17, 21, 28
- Alberta. Dept. of Agriculture., 237-39
- Alberta. Dept. of Energy and Natural Resources. (1975-) 283;
  - Forest Protection Branch., 284-845, 288, 293;
  - see also Alberta. Dept. of Lands and Forests., Alberta. Dept. of Lands and Mines., Canada. Dept. of the Interior.
- Alberta. Dept. of Environment., 283
- Alberta. Dept. of Lands and Forests. (1949-1974), 27, 250-58, 264-65, 278-80, 282;
  - Forest Protection Branch., 28, 267, 270, 281;
  - see also Alberta. Dept. of Energy and Natural Resources.; Alberta. Dept. of Lands and Mines.; Canada. Dept. of the Interior.
- Alberta. Dept. of Lands and Mines. (1930-1948), 227, 237, 242, 247, 250;
  - Forest Service., 23, 25, 227-34, 240, 247;
  - see also Alberta. Dept. of Energy and Natural Resources., Alberta. Dept. of Lands and Forests., Canada. Dept. of the Interior.
- Alberta Forest Service
  - see Alberta. Dept. of Energy and Natural Resources. (1975-), Alberta. Dept. of Lands and Forests. (1949-1974), Alberta. Dept of Lands and Mines. (1930-1948)
- Alexander, Jack, 284
- American Forestry Association, 67
- American Forestry Congress (1882), 70
- Anderson, Thomas, 67
- Appleby, Frank A., 286
- Assiniboia, 5, 13, 49, 66, 90
- Athabasca River system, 17, 179, 187, 235
- Athabasca Valley, 85

B

- Banff, 27, 251
- Banff Hot Springs Reserve, 74, 137
- Banff-Windemere area, 218-19

Bardo, 93
Baron, Gordon, 285
Battleford area, 206
Bell, Jack, 244-45, 251, 284
Benson, John, 284
Bird, James, 44
Black, Robson, 249
Blackfoot
    see Indians
Blefgen, T. F. (Ted), 25, 227-32, 234,
    236-44, 246-48, 250, 260, 276
Borden, Robert Laird, 132-33, 135, 193
Bow River Forest Reserve, 198, 206, 228
Brazeau Collieries, 188
Brazeau Forest, 116, 190
Brennan, J. Allan, 286-87, 290
British Columbia, 28, 57, 63, 154, 191, 265
British Columbia Forest Service, 178, 265
British Empire Forestry Conference, 215
Brouwer, Bernie, 284
bulldozers, 25, 27, 243-45, 254-56
burn rate, 28-29, 269, 288, 295

C

Calgary, 6, 11, 100, 254, 283
Cameron, D. Roy, 169, 177
Cameron, John A. C., 119, 123
Campbell, Robert Henry, 110, 129, 137-44,
    150, 153-54, 160, 163, 167-69, 172-75,
    178, 188-93, 196-201, 204-12
campers, 25, 152, 204, 243
campgrounds, 17, 25, 195, 228, 234
Canada. Dept. of the Interior., 5-6, 9, 63, 65, 115;
    Forestry Branch., 11-14, 17, 21, 23, 102, 140,
    142, 150, 177-78, 193-95, 202, 217, 222, 225,
    288, 293;
    Irrigation Branch., 178;
    Lands Branch., 58-59;
    Timber, Mining and Grazing Branch., 6, 14, 123
    132, 188, 213;
    see also Alberta. Dept. of Energy and Natural Resouces.
    (1975-),
    Alberta. Dept. of Lands and Forests. (1949-1974),
    Alberta. Dept. of Lands and Mines. (1930-1948),
    Crown Timber Agency,
    Crown timber agents
Canadian Committee on Forest Fire Control, 275
Canadian Forestry Act (1948), 250
Canadian Forest Service
    see Canada. Dept. of the Interior. Forestry Branch.
Canadian Forestry Association (CFA), 11, 25, 110,
    112, 129, 154-55, 207, 249
Canadian Forestry Convention (1906), 129, 154
Canadian Institute of Forestry, 28, 138, 254, 258
Canadian National Railways, 21, 176, 215
Canadian Northern Railway, 19, 142, 176, 184
Canadian Pacific Railway, 57-58, 65, 75-76, 78, 80,
    83, 122-23
Canadian Society of Forest Engineers

see Canadian Institute of Forestry
Cartwright, Sir Richard, 81, 87
Casey, Ivan, 261, 357
Castle River Valley fire, 239
Caverhill, Peter Z., 158, 177-78
Champion, Dexter, 284
Chipewayan
    see Indians
Clark, Stan, 141
Clearwater Valley fire, 188
Commission for the Conservation of Natural Resources, 19, 154, 157, 172, 196, 203, 212
conservation, 67, 150, 153-57, 212;
    public education, 154, 157
Cooking Lake area, 94-95
Cooking Lake Forest Reserve, 100, 136
Cooperative Tree Planting Scheme, 138
Cory, William Wallace, 137, 167, 188, 220, 222
Cotton, J., 91
Cox, W. H., 60
Craig, R. D., 136-37
Cree
    see Indians
Council of Assiniboia, 3, 49-50
Council of the North West Territories, 9, 13, 77, 84, 89, 93, 98, 101, 124
Crown Timber Agency, 63, 67, 99;
    see also Canada. Dept. of the Interior. Timber, Mining and Grazing Branch., Crown timber agents
Crown timber agents, 6, 9, 65, 67, 71, 86, 89, 99, 102, 107, 110, 113, 117, 177;
    see also Canada. Dept of the Interior. Timber, Mining and Grazing Branch., Crown Timber Agency
Crowsnest Pass, 39, 142, 202, 228
Cushing, Z.F., 93
Cuthbert, A. R., 159

D

Dawson, Dr. George M., 38-39
Delhaney, Wallace A., 249, 253
Dennis, John Stoughton, 59, 61-64, 79
Destrube, Maurice, 207
Dewdney, Edgar, 81, 85
Dickson, J. R., 140
Dominion Forestry Branch.;
    see Canada. Dept. of the Interior. Forestry Branch.
Dominion Lands Act (1872), 6, 63, 65, 73, 100
Dominion Timber Regulations (1898), 9
Douglas, David, 37
Douglas, Howard, 121
Draper, Chief Justice, 54
Dwight, T. W., 140, 204, 212

E

Eastern Rockies Forest Conservation Board
    (ERFCB) 27, 247, 253, 262, 267-70
Edgecombe, G. H., 158, 163, 177
Edgecombe, Harry, 284
Edmonton, 6, 11, 211, 278, 283
Edmonton House, 44-45
Edmonton, Dunvegan and British Columbia Railway, 19, 191
Edmonton Fire Ranging District, 25, 142,
    184-85, 191;
    see also Northern Alberta Forest District (NAFD)
Elk Island, 95, 136
environmental controls, 283
Europe, 11, 71-73, 111-12, 157-58, 207

F

farmers, 280
    see also settlers (pre 1945),
    residents (1945-)
Ferguson, James, 152
Fernow, Bernard E., 138, 155-57, 174, 193, 201
Finlayson, Earnest Herbert, 183-86, 190-93, 198,
    202-03, 207, 215, 220-25
fire acts;
    see also fire laws and legislation,
    fire ordinances,
    fire policy,
    fire regulations
Fire Brief, 28, 258-262
fire breaks, 9, 74, 78, 89-90, 93-98, 100-01, 114
fire control, 3-5, 28-29, 63, 66, 81, 95,
    107, 290, 293-94, 300;
    methods, 14-16, 42-43, 73, 220, 265, 281;
    plans, 159, 182, 211, 296;
fire control policy, 31, 33, 256, 270,
    281-82, 285, 289, 299
Fire District Ordianance (1886), 78
fire ecology, 47, 71, 121
fire equipment, 25, 161-63, 234-35, 243-46, 261
fire districts, 77, 98
fire fighters, 29, 275, 284;
    see also fire fighting
fire fighting, 192-93, 288;
    see also fire fighters
fire guardians, 9, 25, 74, 77, 98,
    100-01, 111, 231
fire guards
    see fire breaks
fire laws and legislation,
    9, 55, 75, 89, 91, 281;
    see also fire acts,
    fire ordinances,
    fire policy,
    fire regulations
fire management, 27, 65
fire notices, 107, 117, 146, 158
fire ordinances,

  3, 9, 64, 77, 80, 84, 86,
  101, 107, 121, 159;
  see also fire acts,
  fire laws and legislation,
  fire policy,
  fire regulations
fire patrols, 90, 142, 144, 146, 184
fire permits, 23-27, 154, 198, 220,
  230, 234, 236, 252, 280, 283
fire policy,
  1, 8, 252;
  see also fire acts,
  fire laws and legislation,
  fire ordinances,
  fire regulations
fire practices:
  farmers, 280;
  Indians, 1-3, 33-39, 45;
  residents, 252;
  settlers, 86-87, 93-98, 196, 211, 241
fire prevention, 51, 74, 77, 89-90, 106, 138;
  methods, 17, 25, 93-98, 113, 146-49;
  public education, 79, 94, 192-96, 217
fire protection, 21, 285;
  methods, 215, 228, 247-48;
  plans, 193
fire rangers, 11, 107, 123, 142, 167,
  172, 174, 177, 186, 196;
  duties, 117-19, 136;
fire ranging, 129, 167, 177
fire ranging districts, 175, 184-86, 190, 193, 203, 206
fire regulations, 50-51;
  see also fire acts,
  fire laws and legislation,
  fire ordinances,
  fire policy
fire research, 23, 275, 291-93;
  see also forest research
fire supression, 113, 282, 288-89
fire weather, 217-18
Footner Lake Forest, 282
Forest and Prairie Fire Protection Act (1921), 21, 212
Forest Development Research Trust Fund, 288
forest industry
  see timber industry
forest inventory, 27, 63, 222, 250, 258, 295;
  see also surveys
forest management, 27, 107, 132, 199;
  see also timber management
forest policy, 111-12;
  see also timber policies
forest products, 67, 178, 253;
  see also forest research,
  timber industry
Forest Products Laboratory, 19
forest protection, 99, 105-07, 110, 132,
  258, 265, 286;
  see also timber protection
forest protection area, 29, 289
forest rangers,
  99, 111-13, 119, 135, 153, 161,
  198-99, 232, 251;

ranger schools, 21, 27, 242;
training and qualifications,
17, 160-63, 180-81, 190, 202, 244,
249, 251, 254
forest research, 19, 193, 198, 201, 288, 291-93
forest reserves, 6, 73, 86, 108, 131-39,
146, 150-52, 161-66, 175, 178-79,
182, 228-32
Forest Reserves Act (1906), 14, 129-32
Forest Reserves Act (1911), 16, 163-65, 177, 196
Forest Reserves Act (1949), 250
forest technicians, 29, 278, 281
Forest Technology School, 278, 281
foresters, 177-78, 252
forestry, 102, 106, 110, 117, 160, 199, 222;
conferences, 67, 70, 112, 129, 154, 215;
schools of, 11, 14, 112, 166;
training, 240, 254-55, 278
Forestry Training School, 272, 273
Fort Carlton, 43, 47
Fort Edmonton, 47-48
Fort Frances, 43
Fort Garry, 50
Fort Macleod area, 60, 66, 90
Fort Saskatchewan area, 97
Fort Victoria, 48
Foster, George Eulas, 102-105
Fowler, G. W., 134
fuel breaks, 3, 113
fuel management, 3, 51

G

Goodeve, Arthur Samuel, 166
Grahame, James A., 42-43
Grand Trunk Pacific Railway, 19, 142, 184
Gray, Howard, 291
grazing, 14, 25, 146, 182, 228
Great Slave Lake Fire Ranging District, 184-86
Green Zone Policy (1948), 27, 247-48, 278, 298
Griesbach, A. H., 97

H

Hales, W. C. (Rocky), 277
Hammer, T. R.(Ted), 262-64, 275
Hansen, Wallace R., 267-70
Hardisty, Richard, 42
Harkin, James B., 195
Harvie, John, 227, 237, 242-43, 250, 256
Haultain, F. W. G., 124
Hearne, Samuel, 46-47
Heath, Victor, 254
helicopters
see aircraft
Hendry, Anthony (Henday), 45-46
Henderson, Stuart, 134
Henry, Alexander (The Younger), 37

Herchemer, L. W., 89
Highwood fire, 239
Hind, Henry Youle, 58, 60
Hinton, 29, 272-75, 278, 284
Hudson Bay area, 47
Hudson's Bay Company, 3, 40-44, 52-55
Huestis, Eric S., 211, 228, 230, 248, 250-53,
    256-61, 264, 269-72, 275-78
Hughes, George E., 119
Hughes, Stanley, R., 252, 275, 281-83

I

Indian Head, Saskatchewan, 123, 141
Indians, 66, 74;
    fire fighters, 146, 275;
    fire practices, 1-3, 33-39, 45
    fire starting technology, 46
irrigation, 9, 50, 86-88, 99-100, 108, 140, 152, 178;
    see also watershed

J

Janssen, J. L., 248-49, 262
Jensen, H. G., 258, 262-64, 272
Jessup, J. G., 95
Joly de Lotbiniere, Henri Gustave, 67, 72, 105
Junior Forest Rangers, 29
Junior Forest Wardens, 29, 273-74

K

Kamloops area, British Columbia
Kane, Paul, 52-53
Kananaskis fire, 239
Kananaskis Forest Experiment Station, 254
Klumph, S. G. (Bud), 284
Knechtel, Abraham, 140, 146, 149-53, 161, 172, 178

L

Lac La Biche, 207-08
Laird, David, 63-64, 117
land clearing, 101, 142, 196, 244
Laurier, Sir Wilfred, 14, 105, 123, 126-29, 133, 154
Leavitt, Clyde, 174-77, 195
Lesser Slave Lake Forest Reserve, 17, 190
Lesser Slave River, 169-70
lightning, 38, 204, 243, 273
Little, James, 67, 73
logging
    see timber industry

lookout towers, 25, 220, 244, 248-49, 253, 267, 270-71
Loomis, Reginald D., 253
lumber
    see timber

M

McCarthy, L. G., 135
McDonald, Carson, 284
Macdonald, D. A., 211-12
Macdonald, Sir John A., 5, 57-58, 60-62,
    65-66, 70, 73, 83, 123
McDougall, E. G., 170
McDougall, Fred W., 282-83, 286-89, 293, 296-98
McDougall, John, 48
McGill University, 188
MacIntosh, Charles Herbert, 89
Mackenzie, Alexander, 46-47
McKenzie, C. G., 239
Mackenzie River basin, 46-47
MacMillan, H. R., 16-17, 23, 140-42, 152, 178
Macnab, Jack, 284
McPhail, D. G., 67, 119
Manitoba Paper Company, 215
Margach, W., 142, 153
Metis, fire fighters, 1, 275
Millar, W. N., 178, 182, 190-91, 215
mining, 144
Mitchell, Archibald, 140
Moose Mountain Forest Reserve, 86, 137
Morgan, J. H., 6, 70, 72-73, 77, 82-83, 117
Mormons, 84, 98
Morrison, John, 284
Morse, C. H., 211
Murphy, Peter J., 272-73, 277

N

National Advisory Committee, 217
National Forest Week, 23
National Forestry Programme, 240;
    see also Youth Forestry Training Project
national forests
    see forest reserves
national parks
    see parks
natural resources, 13, 25, 224-26, 228, 250
Neilson, F. W., 244
Niederleitner, Joe, 291
Nordin, Vidar J., 254
North American Conservation Conference (1909), 154
North West Irrigation Act (1893), 88
North West Mounted Police (N.W.M.P.),
    5-11, 63, 65, 77, 84, 89, 91-92,
    106-07, 115, 159
North West Territories, 5, 6, 11

North West Territories Act (1875), 5, 64
North West Territories Council, 77, 80, 84, 101
North Western Pulp and Power, Ltd., 28, 264
Northern Alberta Forest District (NAFD),
    231-32, 240-242, 247, 260, 269;
    see also Edmonton Fire Ranging District
Northern Alberta Institute of Technology (N.A.I.T.),
    29, 278

O

O'Connor, Letellier, 172
Ogilvie, William, 71, 85
Oliver, Frank, 119, 128, 132, 134-36, 155, 158, 163-66, 193

P

Palmer, R. H., 186
parks, 17, 73, 79, 86-88, 163-66, 218, 254
Pass Creek fire, 239
Pattison, Pat, 284
Peace River area, 38, 46, 186, 203
Pearce, William, 9, 78, 80, 84, 86-87, 89, 95, 98-99
Perley, W. O., 134
Perry, A. Bowen, 91
Petawawa Forest Experiment Station, 19, 201
Petawawa National Forestry Institute, 291
Peter, Art, 284
Platt, C. F. (Frank), 262, 275, 279, 284
Pocaterra fire, 239
Prairie and Forest Fires Protection Act (1971), 29, 281
Prairie and Forest Fire Ordinance (1877), 64
Prairie and Forest Fire Ordinance (1879), 67, 70
Prairie and Forest Fire Ordinance (1903), 122
Prince Albert area, 91
priority zones, 29, 291
provincial parks
    see parks
Pruden, J.P., 43
pulpmills, 28, 215, 264, 280

Q

Quintilio, Dennis, 285

R

radio, 25, 240
Railway Belt, 57, 65, 150, 191
Railway Commission, 19, 174, 191
railways, 57;
    fire prevention, 19, 121-22, 174, 234;
    fire protection, 167, 184;
    fire source, 70, 75, 79, 83-85,
    118, 122, 152, 191, 204
Railways Act (1903), 118, 122, 140
Railways Act (1912), 19, 167, 174
ranger stations, 220, 264
Ratliff, Chuck, 284
Red Deer area
Red River Settlement, 49
Regina area, 91, 97
residents (1945-), 252;
    see also farmers (1945-),
    settlers (pre 1945)
roads, 90, 95, 100, 115, 252-54, 269
Roche, W. J., 135, 193-95
Rocky Mountains, 6, 73, 88
Rocky Mountains Forest Reserve, 17, 27, 108, 161,
    178, 190, 220, 253, 267, 270
Rocky Mountains Forest Reserve Act, 175
Rocky Mountains Park Reserve, 78-79, 86-88, 165
Ross, A. E., 159
Ross, Norman M., 114
Rowand, John, 42
Rundle, Robert, 37, 47
Rupert's Land Act (1868), 55
rural fire programs, 282, 289
Russell, Lindsay, 59
Ruttan, R. A., 94-95, 98, 100
Ryhanen, H. M., 283, 291

S

Saddle Lake, 48
Sanders, G. E., 122
Saskatchewan, 21, 28, 36, 43, 206-07, 265
Save the Forest Week, 23-24, 217
sawmills, 65-67
Schaffner, F. L., 166
Schneck, Dr. C. A., 112
Selkirk, Thomas, Earl of, 48
settlement,
    115, 124-128, 133, 136, 158, 244;
    see also farmers (1945-),
    residents (1945-),
    settlers (pre 1945)
settlement policy, 117
settlers (pre 1945), 149, 152, 204, 243;
    conservation, 150;
    fire practices, 54, 61, 83, 88-89,
    93-98, 196, 211, 241;
    fire prevention, 94-98;
    see also farmers (1945-),

residents (1945-),
settlement
Sifton, Clifford, 16, 95, 101-104, 110-11, 113, 123-28, 155-57, 193
Sinclair, Sam, 284
Slave
see Indians
Smart, James A., 106, 110-11
Smith, Clifford B., 291
South, Ken, 285
Southesk, J. C.,Earl of, 48
Stauffer, Joseph, 123, 137
Steele, Robert G., 252, 275-76, 280, 282-83
Steele, Samuel Benfield, 36, 90
Stephenson, E. F., 86, 88-89, 99, 104, 110
Stewart, Elihu, 11, 102-11, 114, 117, 119-23, 129-31, 137-38
Strickland, D'Arcy, 159
surveys, 59, 63, 93, 99, 111, 159, 167;
see also forest inventory
Swan Hills area

T

Tanner, N. E., 237, 250
telegraph, 211
telephone, 146, 163-64, 207
ten mile fire fighting limit in the North, 27, 256
timber harvesting, 60-61, 250, 264-65
timber industry, 65, 67, 84, 111, 154, 167, 188
timber management, 250;
see also forest management
timber policies, 52, 87, 253;
see also forest policies
timber production
timber protection, 61-62, 79, 82, 85, 88, 100-01;
see also forest protection
timber reserves, 50, 86, 93-94, 100;
see forest reserves
Tory, Dr. Henry Marshall, 155
trails, 100, 182
Transfer of Resources Act (1930), 23
travellers, 46-48, 74, 86, 90, 100, 172, 234
tree planting, 6, 11, 25, 64, 70-73, 82-87, 102, 106-08, 114, 118, 123, 140
Turtle Mountain area, 99

U

United States, 64, 70
United States Forest Service, 17, 144, 160-61
University of Alberta, 251, 281, 288, 293
University of British Columbia, 252
University of New Brunswick, 14
University of Toronto, 14, 138-40
urban fires

V

Vancouver, British Columbia, 17, 75

W

watershed, 100-01, 153, 157, 169-70, 243
  see also irrigation
Wheeler, A. O., 100
wildfires, 72, 290
wildlife
Willmore, Norman, 262-64, 272-73
Wood, Dr. V. A., 252, 278
Wright, J. G., 218

XYZ

Youth Forestry Training Project, 240, 251, 278

POOR

QUALITY

ORIGINAL